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Journal of Higher Education
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A Study of Conflict in a University*

MOHINDERA SHARMA

Waves of unrest in Western Universities which paralysed the functioning of these organisations during sixties have made their way to Indian campuses in the seventies. The 'revolt' is not limited to students; even academicians are making headlines by their loud protests. The present paper studies conflict in a University during the year 1977. After stating our assumptions about the University as an organisation, a political approach is utilised for studying conflict.

University systems comprise a large number of sub-systems, with their interrelationships not too well defined. The assumption of some organisation thinkers that University exists in a fairly placid and comparatively stable, "protected" environment insulated from outside political pressures (Bramlett, 1974) is open to doubt. There is a lot of pressure on Universities to become socially and economically more relevant and provide more public services (Serbig, 1977). With the growth of public accountability in deciding the internal functioning of the Universities, these organisations turn more complex and more difficult to administer (Austin, and Lauderable, 1976). Moreover, the goal-setting process is highly politicalised, external non-members exert pressure on the goal setting process resulting in confusion among organisation members leading to conflict (Leavitt, 1975). On their own part, the members are exerting immense pressures for democratisation i.e. ensuring more participation to the traditionally "governed" classes. The arbitrariness and even the legitimacy of the University government is challenged by these classes—(Ross, 1976). Thus Universities are functioning under numerous constraints and for understanding the causes of conflict, we have to state our assumptions taking cognisance of the complexity of these organisations (which normally are referred to as third sector organisations).

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*Hereinafter referred to as X University.

University as an Organisation—Assumptions

Due to goal ambiguity and conflicting standards, it is difficult to measure organisation effectiveness. The multiple and dynamic task environments make the problem of measuring effectiveness more complicated and we have to fall back on social criteria as opposed to economic output for measuring effectiveness (Lilics and Shaffer, 1977). There is a struggle between two cultures, the culture of administration and the culture of faculty. Administration tends to emphasize the value of functional process with the faculty emphasising the value endemic to their profession (McGill and Wooten, 1975).

What Universities may like to do on their own sometimes comes in sharp conflict with the general socio-political culture. There is a constant threat to university autonomy by the increasing demand by the local community for economic and social relevance of these institutions to regional development. On the other hand, lack of autonomy is detrimental to the achievement of organisational goals and undermines its efforts to increase its institutionalisation. The perennial conflict has to be resolved by increasing the congruence and conformity of the ideologies of the university and community in which it exists (Burton, 1960).

Organisational relations system consists of participants with dual status. There are no clearcut classes of "the governors" and "the governed". The major components of organisational relations system are the administration, the faculty and the students. The faculty plays roles of both "the governed" and "the governor". In fact, the professional character of the University organisations makes the roles of teacher in an University varied. Students expect him to be knowledgeable, well prepared and articulate; their parents wish him to serve as a substitute for them; and colleagues expect him to be a good researcher. Similarly, society, professional associations and administration have varied, sometimes conflicting, expectations from a University Professor (Ross, 1976). This multiple ranking system makes evaluation of teacher's performance difficult.

In the structure of the university organisation power cannot be tied to specific positions because the source of power for the faculty is disciplinary prestige and it is awarded by the "outsiders" to the organisation. It is difficult to enforce rational legal type of decision-making due to the loose lying power structure and hence, a higher incidence of conflict is observed in University organisations (Price, 1968). Another factor resulting in conflict is the widespread resentment against centralisation of strategic and tactical decision-making by the faculty. Centralisation which is considered conducive to organisational effectiveness in other organisations is treated as retarder of creativity in Universities (Strantum and Schwartz, 1970).

Methodology

An autopsy of the X University's functioning for six years' period 1971-76 is attempted to discern the causes of waves of unrest which the University witnessed during the year 1977. The year witnessed a lot of discontent among teachers: marked by dharnas, gharaos, boycott of classes and hunger strike. The conflict was basically limited to the main campus of the University located in capital city. The movement of teachers, who, sometimes, were supported by the employees and students, resulted in resignation by two Vice-Chancellors and creation of two rival associations of the teachers.

Conflict in X University—A Case

After having stated our assumptions about University as an organisation, we discuss the groupings and typology of conflict observed in X University. The chronological sequence of various events in the University during 1977, demonstrates that the turmoil in the University was spearheaded by teachers. The discontent among employees and students had not reached the level which could trigger off a movement of protest. It was the faction-ridden teachers' community which disturbed the academic atmosphere in the University. The main point of dispute was the demand for ouster of the second Vice-Chancellor, who had joined the University in 1976. The groups which were responsible for ousting him during the first half of the year, supported his successor in the latter half. Similarly, the groups labelled as anti-chargers during the first half were responsible for the ouster of the new incumbent in latter half. Thus roles of groups vis-a-vis establishment were reversed in the latter half of the year. The major groups in the University with reference to the second Vice-Chancellor were:

1. Anti-chargers in Post-Graduate Centre.
2. Pro-chargers in Post-Graduate Centre.
3. Neutrals in Post-Graduate Centre.
4. New recruits in Directorate of Correspondence Courses.
5. Rest of the teachers in Directorate of Correspondence Courses.
6. All teachers in the University Evening College.

Typology of Conflict

The conflicts arising in organisations are multi-dimensional and as such it is extremely difficult to single out the reality of conflict, it was predominantly employee—employee conflict, and not the superior-subordinate type as is indicated by the demand for ouster of the Vice-Chancellors. Between groups A and B in the P.G. Centre the conflict could be characterised as of 'interests that were different but not necessarily incompatible'; similarly mild degree of conflict between groups E and F was also of the latter type.

The type of conflict grows out of the similarities in the requirements of organisation members. All organisations are in some sense, an economy in which scarce resources must be allocated; the demand on resources exceeds supply. Organisations represent one big allocation problem, and allocation problems give rise to competitive behaviour.

The majority of the teachers in group A belonged to the local community who are placed at relatively lower level of the hierarchy of teachers. They maintained that the first Vice-Chancellor ignored their claims for promotions and recruited his own people at key positions. They were anti-chargers because they expected the second Vice-Chancellor to rectify this imbalance of power by penalising the illegal beneficiaries of the previous regime belonging to group B. In fact, any defeat of group B was a victory to the group A. Groups A and E belonged to different wings of teaching, the senior teachers in Directorate of Correspondence Courses were worried that if the group A of local teachers in Post-Graduate Centre annexed some power, they might turn out to be competitors for promotions in Directorate of Correspondence Courses, jeopardising their chances of promotions. In fact, these fears were baseless because there was a large number of vacancies in higher hierarchies of teaching posts in both Post-graduate Centre and Directorate of Correspondence Courses and groups A and E could share these.

Characterisation of conflict can also be attempted by the modes of protest adopted by the factions of teachers and the means of getting grievances redressed. The various methods of protest adopted were:

1. Submission of memoranda to authorities.
2. The war of wall posters and press.
3. Deputations to the authorities.
4. Hunger strikes.
5. Protest marches, *gharaos* and *dharnas*.

The first four modes of protest could be characterised as non-violent but the existing rules of game were not observed, e.g. anonymous letters and memoranda were submitted, posters were circulated without mentioning the names of press. Thus, the conflict at its best was peaceful but unprincipled and in case of fifth mode of protest it went even farther because gharaos and dharnas rely on physical force, so the conflict turned into combat without rules.

A vicious circle of power grabbing through fair or false means was witnessed on the campus scene. The second Vice-Chancellor got the cooperation of groups A and D; B and E were opposed to him, whereas groups C and F were to a large extent neutral, the latter siding with anti-chargers and pro-chargers on issue to issue basis and also considering the balance of power. The third Vice-Chancellor, who was brought as an ad hoc arrangement, was supported by groups B and E. The opposite combination of A and D waged a pitched war and one of its leaders went on "fast unto death", on the issue of "alleged irregularities by third Vice-Chancellor in making sixty appointments to teaching posts in the University". Ultimately, two associations of teachers were formed, the third Vice-Chancellor was removed and an enquiry into the appointments made by him was ordered. The fourth Vice-Chancellor had taken over but he was finding it tough to maintain a balance of power. The situation at initial stages of conflict is depicted in diagram I.

Sources of Conflict—An Analysis

If we analyse the basis of grouping during this period, it enables us to arrive at the causes of conflict. An individual seeks to reinforce his own attitudes, biases, ideas and beliefs by selecting associates with whom he can agree (Sharma, 1976). The formal task groups created in the organisation structure of the university are rarely able to assume the dimensions of psychological groups. It is pre-conceived similarity of interests which brings individuals together in a group.

The Formal Divisions of the Organisation

There are three clear-cut divisions in the formal structure of the University—

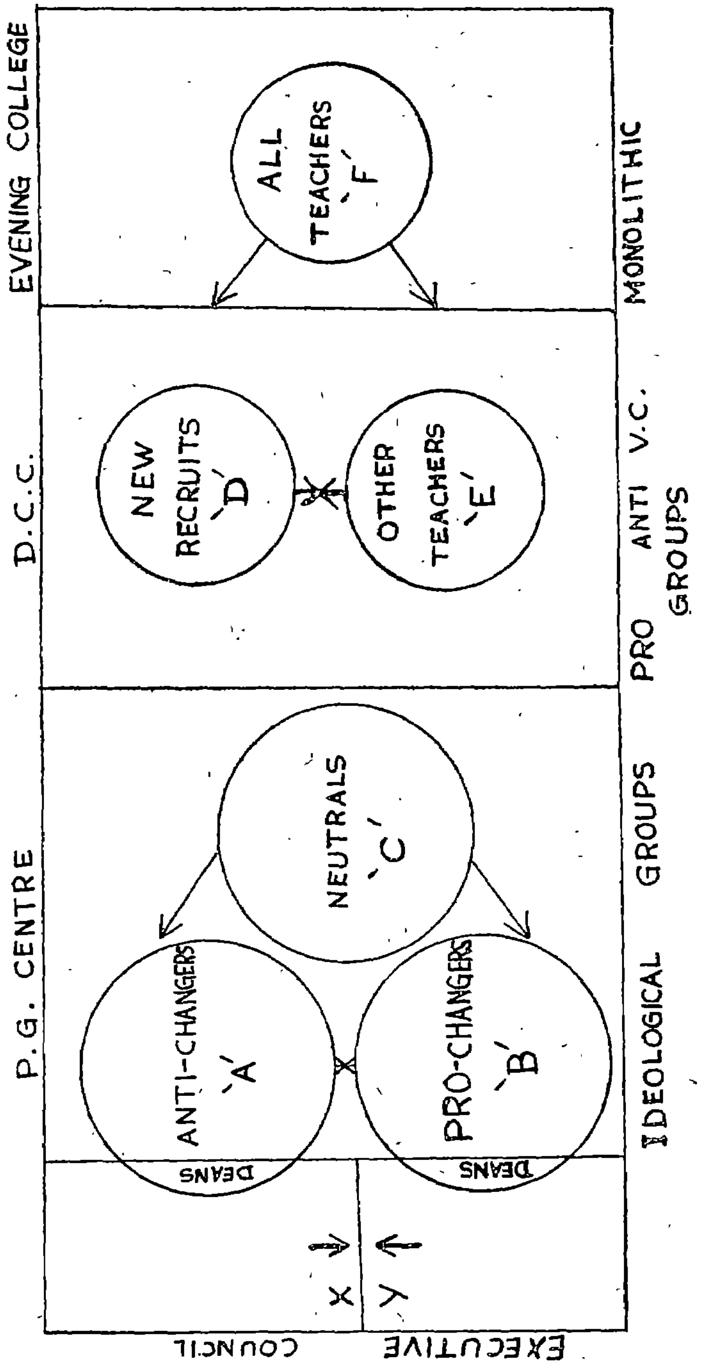
1. Post-Graduate Centre for Teaching.
2. Directorate of Correspondence Courses.
3. University Evening College.

The teachers in these three wings have different selection procedures, different qualifications for entering the teaching profession and the facilities offered to the faculty in these three wings differ according to their job contents. Recently, University Grants Commission has sought to rationalize the wage structure by equating the new entrants to the teaching jobs in all these wings. This has created heart burnings for Assistant Professors in Post-Graduate Centre because they were better qualified and had to face more rigorous selection committees, at the time of entering the profession, as compared to their counterparts in other wings. Conversely, the Directorate teachers perceive P.G. Centre, Assistant Professors to be a threat because the latter with their better qualifications can compete better for the higher selection posts in the Directorate. Apart from these perceived clashes of interests, there is a geographical separation of these three wings of teaching restricting the inter-actions among these three formal tasks groups.

Cultural Affiliations

Socio-cultural variables like regional variations in culture, eating and dressing habits, language and the caste system have also contributed to the creation of informal group affinities other than the formal task groups.

Diagram 1


EVENING COLLEGE
ALL TEACHERS 'F'
MONOLITHIC
D.C.C.
NEW RECRUITS 'D'
OTHER TEACHERS 'E'
PRO ANTI V.C. GROUPS
P.G. CENTRE
NEUTRALS 'C'
ANTI-CHANGERS 'A'
PRO-CHANGERS 'B'
DEANS
DEANS
IDEOLOGICAL GROUPS
X
Y
COUNCIL
EXECUTIVE

This University, being a state university, is committed to the promotion of local talent, of course, without any prejudice to the all-India character of the institution. The prevalent thinking among the local teachers shared, of course, to a lesser extent by the public at large and the government, is that all other things being equal local talent should be preferred in making recruitments. They allege that the first Vice-Chancellor had ignored their claims and had imposed on the University 'a regional clique' mostly belonging to his own caste and region. The non-locals, on the other hand, allege that local teachers who have inferior academic credentials are raising the bogey of sons of soil theory. These allegations against each other have given rise to two clear-cut groups among teachers.

Political Ideologies

Value-free study of social sciences in universities is under constant attack by a section of academicians, who contend that the social sciences being imperfect sciences, their models are based on certain assumptions. These assumptions are often referred to as the paradigm commitments or ideologies. Similarly, the concept of keeping education free from politics has since long been assigned to the grave and as such the researches as well as behaviour of academicians is influenced by the political ideologies they adhere to. The proponents of "egalitarianism" as the main value often come in clash with the traditionalists, stressing the individual differences. The former usually call themselves leftists and designate the latter as rightists. In the present case also, one basis of groupings was ideologies and the leftists normally didn't engage in so called 'petty power politics of the university' so they were not a party to a large extent to the present conflict among teachers.

Problem of Incentives

In universities, there are three hierarchies of teachers viz. Assistant Professors, Associate Professors and Professors. All these three categories are paid different salaries, the promotion of the teachers is generally considered to be a recognition of their academic achievements. Moreover, some of the teachers in higher hierarchies are normally Heads of Departments and Deans and, thus, enjoy more decision-making powers than the other two categories. The proclaimed criterion of promotions is merit-cum-seniority. But evaluation of merit becomes difficult due to the multiple role of the teacher and the double ranking system of his disciplinary prestige. Every promotion creates bickerings among teachers, because those who are not promoted challenge the yardsticks used for measuring the abilities of teachers. This problem of determining basis of incentives is further accentuated by the lack of democratisation of powers in X University. There are some permanent Deans and Heads of Departments who resist any attempts to democratise the university structure and can afford to provide incentives according to their whims and fancies.

Unplanned Growth

Apart from these sources of conflict, the problems of X University spring up from unplanned growth in the business of university. No environmental analysis or stock of facilities available was taken by the authorities while setting up various departments. Directorate of Correspondence Courses is an extreme example of haphazard growth. Courses were started, evaluators appointed on ad hoc basis without studying the long range viability of various programmes. Lack of facilities, initially, spoilt the goodwill of the Directorate and competing institutions mushroomed offering instruction by correspondence courses. This wing of the University which was taken up as a commercial project is becoming a long term liability in the University and there is a widespread frustration among the teachers in this wing. They have organised themselves and are demanding the same status as Post-graduate Centre teachers whereas the project they are engaged in is not as profitable as it was at its inception.

These teachers are trying to undo the existing divisions of the University and wish that they should be allowed to take up instructional assignments in the regular teaching departments because they realize that in long range the volume of operations in Directorate of Correspondence Courses may not be able to justify the employment of such a large number of teachers. But the teachers on the other side of the fence are resisting this demand of Directorate teachers because they feel that it is harmful to their interests to allow any such horizontal movements in three wings of teaching.

Conclusion

From the analysis of causes of conflict in the earlier sections, it is clear that ideas, actions and interests of the teachers in X University are interacting with the existing power structures and the observed 'combat without principles' is challenging the officially organised and 'legitimate' arrangements of the University organisation. A behavioral scientist, ostrich like will suggest process consultation or laboratory exercise for partial resolution of the dysfunctional aspect of conflict (Sharma, 1978) paying lip services to the creative aspect of the conflict. He hesitates while suggesting even structural changes in the organisation. Webarian management analysis shall suggest rationalisation and a strict enforcement of service conditions and ask for a better statement for existing authority responsibility relationships knowing fully well that rational legal decision-making alone cannot deliver the goods or resolve the conflict of interests (McGill and Wooten, 1976). A little more sophisticated is the approach of the system theorist. He shall suggest a political approach relying on statement of paradigm commitments of the university system and shall look for changes in system design to restore the environmental linkage which has disrupted by the fast changes in environment (Tushman, 1977). But the equilibrium he restores by finding a solution of the existing clash of interests will be upset by the changes in larger systems and this 'exploitative adaptation' of internal mechanisms of university organisation to the environments shall go on ad infintum (Yoshihara, 1977).

A more realistic is the approach of Andrew Gunder Frank who recognises the goal ambiguity, conflicting performance standards, value differences, polycentric authority structures and dilectical change strategies for university organisations which he characterises as third sector organisation (Frank, 1975). He recognises the interface which university has with the society and suggests conflicting standards analysis. The process of social construction carries on the recognition of contradictions in social systems, organisations have to function as praxists and the existing arrangements and the constitution of organisations has to be analysed in light of ideas and interests of the participants of organisation, in essence a dilectical approach to the study of organisations has to be adopted (Benson, 1977).

Universities, the organisations of intellectuals who are said to be harbingers of change, have shown a disappointing degree of resistance to change. We refuse to see the writing on the wall which threatens the very existence of the present models of creating knowledge and awareness; we decry the irresponsible student community, misguided by politicing faculty and have a strong urge to go back in history rather than looking for alternate models of creating knowledge and awareness, realizing fully well that we are already functioning as a counter to the stated objectives of the organisations, we are participating in.

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Teaching and Research in Higher Education : Some Problems

V. BHASKARA RAO

Education Ministries of the Central and the State Governments, the University Grants Commission (UGC) and the Universities have been emphasising the effective teaching and research by the undergraduate and post-graduate teachers, especially after the announcement of the Fifth Plan UGC Pay Scales for college teachers.[1]

The role of teachers need not be over emphasised in all fronts of national development. Teachers are expected to be real builders of the society, converting the under educated students into fine finished products which will have a proper demand in the employment market. To achieve this process of conversion the teacher should be competent, well versed in the subject, equipped with proper skills of teaching and continuously maintain intellectual standards. It is, therefore, imperative that the teacher in the social sciences should have the widest possible interaction to understand the problems of the society. A free interaction with various social groups and organisations will only results through a systematic and methodical research. The vistas of research or advancement of learning by any chance cannot be confined to the classrooms, but must be persued in the laboratory, the library and in the field.

The main objective of this paper[2] is to find out answers to three pertinent questions: first, whether a teacher (undergraduate or post-graduate) has enough time to undertake serious and fruitful research either for the degree of Ph.D. or for writing a meaningful research paper under the present system. Secondly, if he has some time whether it is sufficient to conduct research methodologically without affecting the classroom teaching. Thirdly, after obtaining a doctoral degree (Ph.D.) whether the post-doctoral research papers, are indeed useful to the students, in particular, and to the community at large.

The study is based on personal experience, observation and emperical investigation. In investigating the problems, two factors are kept in mind: First, the academic year of the Osmania and the Kakatiya Universities in Andhra Pradesh and assignment of functions and duties to a teacher. Secondly, the time available to a teacher for discharging duties in his daily life as a teacher, in particular, and as a man and social being in general.

To find out answers to these questions, a structured questionnaire was administered at random to 91 college teachers[3] who have been working on some research[4] problem at Warangal.[5] They were asked to reply to the following questions:

> 1. Whether their research work was considered useful to their students; 2. Whether they are engaged in teaching the subject in which they researched; 3. Whether research was necessary for effective teaching; 4. Whether it was possible simultaneously to conduct research and effective teaching; 5. How much time they need in a day for research; and 6. How much time they could spare for effective research.

The answers to these questions are tabulated in Tables 1 and 2.

Table 1 shows that majority of the researchers (48) belong to the Science Faculty. Most of the teachers (64) possess 6-10 years of teaching experience but 77 below 10 years of research experience. For most of them took up research after joining the service.

Table 2 points out that the research of 75% (67) teachers is useful to their students ranging from 25% to 50%. About 25% of the respondents felt that their research is not useful to the students. It also reveals that 45% (41) of them are not teaching the subject in which they researched, particularly at the undergraduate level. Likewise research of 67 teachers is useful to the students but only 50 have utilised their research in teaching. Another important feature is, 11 said that their research is 100% useful to the students, but only three of them are using 100% of their research work in teaching.

Table 3 points out that 90% (82) of the teachers believe that research is necessary for effective teaching. Although, 25% of the respondents' research is not useful to the students and 45% are not teaching the subject of their research specialisation (see Table 2). Only 10% of the teachers believe that research is not at all necessary for effective teaching. Most of them in this category do not have research experience or any research degree to their credit.

Table 4 reveals that majority of the teachers (47) particularly, lecturers, both of the post-graduate and undergraduate teaching believe firmly that it is not possible to simultaneously conduct research and effective teaching under the present system of university education. For they are all new entrants into the profession and thus require more time for preparation for teaching. Their workload of 14 hours at the post-graduate and 22 periods at the undergraduate level, the lack of research environment and facilities, and the feeling of non-relavance of research to teaching particularly in undergradutae colleges are the main causes for such a belief among them.

Table 5 shows that out of 91 respondents 82 believe that research is necessary for effective teaching. For nine teachers, research is not only unnecessary but also not possible to conduct research and effective teaching simultaneously. The views of the teachers on the necessity of research and possibility of it while effectively teaching are examined against their teaching and research experiences.

Twenty-four (67%) among 36 teachers with 1-5 years of research experience felt that conducting research is not possible with effective teaching, but ten believe that research is much necessary and 12 very much necessary for effective teaching. While 70% (12) of the teachers with 1-5 years of teaching experience felt that research is much (7) and very much (5) necessary but 53% (9) said it is not possible to conduct research simultaneously with teaching.

More than 90% of the teachers with research experience of 6-10 years believe that research is much (10) and very much (11) necessary but only 64% (14) of them felt it is possible to conduct research while effectively teaching. Although about 80% of the teachers with 6-10 years of teaching experience felt that research is much (12) necessary and very much (12) necessary, only 49% of them said it is not possible to conduct research while teaching.

About 80% (16) of the teachers in the 11-16 years of teaching experience felt that research is much (6) and very much (10) necessary and 52% (11) of them said it is not possible to conduct research while effectively teaching. Likewise 77% (10) of the teachers with 11-16 years of research experience said research is much (5) and very much (5) necessary, but 46% (6) of them felt research is not possible while effectively teaching.

The opinions of the teachers with 17 and above years of teaching and research experience about the necessity and possibility of research while teaching has not been much divided as in the case of other groups. It seems that the young teachers with little research experience have feelings that research is not much necessary and it is not possible to conduct research while effectively teaching. Teachers in other groups, most of them already possessing research degrees and sufficient experience of teaching and of research felt that research is possible while teaching. They, in fact, do not require much time either for the preparation for classroom lectures or for research. First, because of their years of experience and the secondly, for they already possess a research degree which does not much press them for work.

Table 6 shows that out of 91 teachers 38 said they need four hours, 22 said six hours, and 18 two hours in a day for effective research. But (Table 8) only 15 among 91 are able to spare 100% time that they wanted. About 1/3 (33) of them are sparing only 41-50% of the time they need. 75% of the teachers could not spare the time they wanted. Among them 8 are not giving any time for research. Only 25% are sparing more than 50% of the time they require. It is again observed that most of the researchers who are young and belong to the Science Faculty want more time for laboratory research. But they felt it was not possible to spare required time due to heavy teaching work. While about 41 out of 91 teachers are able to spare two hours, 19 are able to spare only one hour, and 11 four hours in a day (see Table 7) for research work.

To sum up, teachers felt that, to a large extent, their research is useful to their students and believed that research is much necessary for effective teaching. But they said that research is not possible simultaneously with effective teaching under the present system of higher education. On the whole, they felt it is not possible to spare required time for research.

Table 9 shows that it is possible to find time for research, provided the workload is reduced to 10 hours at the post-graduate (14 periods at the undergraduate level) in a week. Apart from the teachers indulging in gossip, the conditions of our staff rooms and lack of facilities also involve them in spending much time wastefully. This can be avoided by proper measures. The teacher gets more time for research and effective teaching provided the colleges function from 9.00 a.m. to 3.00 p.m. At the post-graduate level, the teachers in Social Sciences, Commerce, Arts and Humanities should not have any teaching work after 1.00 p.m. This would enable the teachers as well as the students to have more time for preparation and research.

In addition to the examination duties, the teacher also spends much of his time on the examinations during the academic year under the present semester system.

The Problem of 'Researchocracy'

It is a well known fact that in the Indian Universities there are very few qualified research supervisors to guide the young research scholars. Acceptance of the candidate by a qualified guide and the selection of a problem are mostly left to the choice of the guide as most of them are not qualified or competent to guide all topics. The problems and difficulties of working under them till the submission of the thesis for the Ph.D. degree, cannot be narrated fully but can be expressed in one word RESEARCHOCRACY (like Bureaucracy). The researcher has to follow the likes and dislikes of the guide, write papers for him, assist in his academic (some times personal) works, wait for longer periods to get appointment with him for a discussion. And the Guide takes his own time to go through the chapters of the thesis. The whole game of research is often treated as a personal affair between the guide and the scholar rather than some thing institutional. Even getting a Ph.D. degree most of the times is in his hands. Therefore, there is a feeling among the public and academicians that generally Ph.D. degrees are given and managed and not earned.[6] If this feeling is to be avoided research should be made more institutional, more formal and an integral part of the organisation and its goals.

One of the strange aspects of research is that even after getting a Ph.D.

degree and specialisation in a particular field of knowledge, there is no guarantee in the Indian Universities that the Ph.D. holder will be asked to teach the specialised subject. For, such subject may not find a place among the subjects (papers) taught in a particular department (see Table 2 for details). If one is fortunate to have such paper, it comes to 1/3 of his total workload only as every one has to teach atleast three papers. Therefore, he has to study other subjects to equally justify his teaching of other papers along with his specialisation. Can he do it? He has specialised in a field after studying hundreds of books, articles, reports and so on. Can he study other subjects in the same way? It may not be possible. Therefore, he can be an effective teacher in his specialisation but not so in the other two papers.

Conclusion

Teachers believe that research is much necessary for the effective teaching and their research is useful to their students particularly at the postgraduate level.

Effective teaching and research are not possible simultaneously under the present system of university education. Therefore, it calls for certain changes in the workload pattern and system of functioning of the colleges. There is an imperative need to provide certain research facilities and research conditions in the colleges.

Research should be made more institutional, more formal and an integral part of the institution and its objectives. Research should be conducted by the social sciences departments by putting in the collective efforts of the faculty members for more depth analysis of social problems.

The objective of research should be organisational development, not the individual development. The teacher in the social sciences should understand and analyse the social problems and give a lead to the society in a desired direction as an intellectual and social scientist. As long as it does not happen, no extent of scientific and technological growth and development could be fully utilised. For there is an ideological gap and inability in the proper understanding of social phenomena where science and technology are used for the social change and development.

Table 1

ACADEMIC BACKGROUND OF THE RESPONDENTS

Designation of the Respondents	*No. of Respo-dents*	*Faculty*				*No. of Years of Teaching Experience*				*No. of Years of Research Experience*			
		Sci-ence	*Arts*	*Social Scie-nces*	*Comm-erce*	*1-5*	*6-10*	*11-16*	*17 and above*	*1-5*	*6-10*	*11-16*	*17 and above*
Professors	7*	3	1	2	1	Nil	Nil	Nil	7	Nil	Nil	1	6
Readers	12**	8	2	1	1	Nil	2	8	2	1	1	5	5
Lecturers													
Post-Graduate	37†	24	5	6	2	8	17	12	Nil	16	17	4	Nil
Undergraduate	35††	13	10	10	2	10	18	7	Nil	28	4	3	Nil
Total	91	48	18	19	6	18	37	27	9	45	22	13	11

Note:
- * *All are Ph.Ds.*
- ** *10 are Ph.Ds.*
- † *21 are Ph.Ds., 2 submitted their thesis for Ph.D. and one is M.Litt.*
- †† *5 are Ph.Ds., one submitted his thesis for Ph.D. and 5 are M.Litts.*

Table 2

USEFULNESS OF RESEARCH AND TEACHING SPECIALISATION

Designation of the Respondents	*Useful*						*Teaching Research Specialisation*					
	Yes					*No*	*Yes*					*No*
	25%	*50%*	*75%*	*100%*	*Total*		*25%*	*50%*	*75%*	*100%*	*Total*	
Professors	3	1	2	1	7	Nil	3	1	2	Nil	6	1
Readers	6	3	Nil	2	11	1	2	6	2	Nil	10	2
Lecturers												
Post-Graduate	9	13	2	4	28	9	9	12	5	2	28	9
Undergraduate	7	3	7	4	21	14	3	2	Nil	1	6	29
Total	25	20	11	11	67	24	17	21	9	3	50	41

Table 3

NECESSITY OF RESEARCH FOR EFFECTIVE TEACHING

Designation of the Respondents	*Yes*				*No*
	Not much necessary	*Much necessary*	*Very much necessary*	*Total*	*Total*
Professors	Nil.	4	3	7	Nil
Readers	3	4	5	12	Nil
Lecturers					
Post-graduate	10	12	14	36	1
Undergraduate	6	10	11	27	8
Total	19	30	33	82	9

Table 4

POSSIBILITY OF CONDUCTING RESEARCH AND EFFECTIVE TEACHING SIMULTANEOUSLY

Designation of the Respondents	*Possible*	*Not Possible*	*Total*
Professors	6	1	7
Readers	10	2	12
Lecturers			
Post-graduate	14	23	37
Undergraduate	14	21	35
Total	44	47	91

Table 5

NECESSITY OF RESEARCH FOR EFFECTIVE TEACHING AND POSSIBILITY OF RESEARCH AND EFFECTIVE TEACHING SIMULTANEOUSLY BY TEACHING AND RESEARCH EXPERIENCE OF THE TEACHERS

No. of Years of Experience of the Respondents		*Not much necessary*	*Possibility*		*Much necessary*	*Possibility*		*Very much necessary*	*Possibility*		*Total*
			Yes	*No*		*Yes*	*No*		*Yes*	*No*	
1—5	TE	5	2	3	7	4	3	5	2	3	17
	RE	14	5	9	10	4	6	12	3	9	36
6—10	TE	8	3	5	12	6	6	15	9	6	35
	RE	1	Nil	1	10	7	3	11	7	4	22
11—16	TE	5	Nil	5	6	5	1	10	5	5	21
	RE	3	Nil	3	5	3	2	5	4	1	13
17 and above	TE	1	1	Nil	5	4	1	3	3	Nil	9
	RE	1	1	Nil	5	5	Nil	5	5	Nil	11
	TE	19	6	13	30	19	11	33	19	14	82
Total	RE	19	6	13	30	19	11	33	19	14	82

Note: *TE = Teaching Experience*
RE = Research Experience

Table 6

TIME REQUIRED FOR EFFECTIVE RESEARCH IN A DAY

Designation of the Respondents	*Time Required (in hours)*				
	Two	*Three*	*Four*	*Five*	*Six*
Professors	2	1	3	Nil	1
Readers	4	2	5	Nil	1
Lecturers					
Post-graduate	6	2	20	3	6
Undergraduate	6	Nill	10	5	14
Total	18	5	38	8	22

Table 7

TIME SPARED FOR CONDUCTING RESEARCH IN A DAY

Designation of the Respondents	*Time Spared (in hours)*					
	Nil	*One*	*Two*	*Three*	*Four*	*Five*
Professors	Nil	2	4	Nil	1	Nil
Readers	1	4	6	Nil	Nil	1
Lecturers						
Post-graduate	2	9	17	4	3	2
Undergraduate	4	4	14	5	7	1
Total	7	19	41	9	11	4

Table 8

THE GAP BETWEEN THE TIME REQUIRED AND THE TIME SPARED FOR EFFECTIVE RESEARCH

Designation of the Respondents	*Percentage of the time spared against the time required*											
	0	*1-10*	*11-20*	*21-30*	*31-40*	*41-50*	*51-60*	*61-70*	*71-80*	*81-90*	*91-100*	*Total*
Professors	Nil	Nil	Nil	1	1	2	Nil	1	Nil	Nil	2	7
Readers	1	Nil	Nil	1	2	4	1	Nil	Nil	Nil	3	12
Lecturers												
Post-graduate	3	Nil	1	4	2	18	2	1	1	1	4	37
Undergraduate	4	Nil	3	1	4	9	1	1	4	2	6	35
Total	8	Nil	4	7	9	33	4	3	5	3	15	91

Note: *The Scale of measurement of time required is 100.*

Table 9

FINDING TIME TO RESEARCH

S.No.	*Nature of Activity*	*Time necessary*	*Time to be reduced to*	*Time saved for research*
1.	Teaching in a day (P.G.)	2.20	1.40	0.40
2.	Preparation for class work	2.30	2.00	0.30
3.	Reading other than class books	1.30	0.30	1.00
4.	House hold duties	0.55	0.20	0.35
5.	Attending to family people	1.30	0.45	0.45
6.	Recreation and meeting people	1.20	0.50	0.30
	Total	10.05	6.05	4.00

References

1. It is a different matter altogether that some state governments have implemented the scales, some accepted in policy to implement, some expressed their inability to pay, and some are trying to implement modified pay scales.
2. The paper is not concerned with the problem whether research qualification does really improve the competence of the teacher and whether all the teachers have the aptitude and competence for research. The problem of non-availability of the guides or research supervisors in every field is excluded from the purview of this paper.
3. College teachers include Professors, Readers and Lecturers of Post-graduate and Undergraduate Colleges. There are about 350 teachers in the University Colleges and eight Arts and Science Undergraduate Colleges. But there are about 125 teachers who are involved in some research work.
4. Ph.D., M. Litt. and Paper writing.
5. This study was undertaken during 1976.
6. R.L. Nigam, Teaching and Research, *The Indian Express,* Vijayawada, dated 23-8-1976, p. 6.

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Regional Distribution of Selected Technical Educational Facilities in India

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Economic development of a country is vitally related to the development of its human resources through education and training—both formal and informal. It is, therefore, essential to have a proper planning of education and training, so that the economic development is not constrained by lack of trained manpower. In India technical education is planned at the national level in relation to the perspective of development of the economy even though since the Third Plan attempts were made to assess State-level technical manpower imbalances in the form of manpower surplus in one region co-existing with shortage of manpower in another. It is, in this context, intended to study the regional spread of technical education of the three key categories—Agricultural, Engineering and Medical and to find out whether there are regional imbalances in the distribution of educational facilities for these three categories of manpower who play a crucial role in socio-economic development of the country.

We may note here that the Institute of Applied Manpower Research, New Delhi, in its report "The Development of Modern Medical Education in India and Student Wastage in Medical Colleges in 1967" touched upon this distributional aspect in respect of medical education. The report analysed the growth in facilities for medical education during the first three Plan periods state-wise and compared it with the population and educational statistics in the states. However, no such study has so far been made in respect of engineering and agricultural education.

Technical Education and Five-Year Plans

At the outset it will be interesting to trace the development of these three categories of technical education through the Plan periods and Plan policy with regard to them. As the Table below shows, the growth in facilities in agriculture, engineering and medical education at the graduate level was large during the first three Plan periods particularly from 1955 to 1965. However, between 1965 and 1970 the growth in agricultural and engineering educational facilities has been marginal. In fact, admissions fell in both these courses on account of worsening job situation particularly since 1968 and a deliberate government attempt to restrict admissions to engineering courses as discussed in later paragraphs. In the case of M.B.B.S., however, eight more colleges were added and admissions increased by 14%.

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*The views expressed in the paper are of the authors and not of the organisation to which they belong.

Table 1

NUMBER OF COLLEGES AND INTAKE IN TECHNICAL EDUCATION
1951-1975

Year	*Agriculture*		*Engineering**		*Medical*	
	No. of colleges	*Admissions*	*No. of colleges*	*Admissions*	*No. of colleges*	*Admissions*
1951	19	1060	53	4788	30	2489
1955	31	1989	65	5890	41	3660
1960	51	5634	102	13692	60	5874
1965	70	10049	133	23815	87	10520
1970	72	7285	138	17907	95	12029
1975	73	N.A.	152*	22454	106	11273

N. B. (*i*) *Indian Council of Agricultural Research, New Delhi.*
(*ii*) *Ministry of Education—Survey of Facilities.*
(*iii*) *Pocket Book of Health Statistics of India, 1976.*
* *Includes institutes conducting special courses like jute technology, marine engineering etc.*

Agriculture

In the sphere of agricultural education, the Fourth Plan (1969-74) laid stress on qualitative improvement as "There has been a rapid expansion of facilities for the training of agricultural and veterinary graduates to meet the requirements of trained manpower for agricultural development" (p.368). It, therefore, laid stress on the qualitative improvement. The Plan noted the mushroom growth of agricultural colleges in some states the standard of which was to be improved.

As a result of remedial measures taken to improve the quality and emerging surpluses, the intake came down to 6,590 in 1972 from ten thousand in 1965. The draft Fifth Plan 1974-79 also observed regional imbalances in agricultural education—Uttar Pradesh, Maharashtra and Rajasthan accounting for nearly 2/3rd of the annual intake—and stressed the need for qualitative improvement in agricultural education.

Engineering

In Engineering and Technology actual admissions rose to 25 thousand in 1966, but dropped sharply to 18 thousand in 1968. The Fourth Plan opened with a large backlog of unemployed engineers. A number of short-term measures were envisaged by the Government of India to create employment opportunities for engineers and a policy of restricted admissions was recommended. Besides, it was decided to bring down the level of admissions to 18,000. However, actual admissions remained even below this level—17,907 in 1970. But since 1971 onward it has shown an increasing trend and in 1975 the actual admissions were 22,454. The Draft Fifth Plan (1974-79) Vol. II, however, pointed out the need to review the admission capacity separately in respect of degree and diploma courses and among the specialities on a disaggregated basis (p. 269).

Medical

In the field of medical education, the Fourth Plan noted the shortage of teachers due to "the rapid increase in the number of colleges and their intake capacity and placed increased emphasis on strengthening of Post-graduate education" (p. 389). The Fifth Plan document also laid emphasis on consolidation rather than expansion of the medical education programme (p. 237). The undergraduate medical education was to be reoriented towards the needs of the country. In order to improve the quality of education the Plan suggested that the level of admissions to medical colleges needed to be restricted to 100 per annum per college unless the increased admissions are accompanied by additional teaching facilities such as beds, equipment, staff, etc. It added "Efforts will need to be made to regularise the admissions in the Medical Colleges in the country on uniformly competitive basis" (p. 237—Plan Document).

Present Position

At present there are 73 Agricultural Colleges, 152 Colleges in Engineering and Technology and 106 Medical Colleges with an annual intake of 6,600 in Agriculture, 22,500 in Engineering and Technology and 11,300 in Medical—First Year Degree Courses. The estimated intake per million of population works out to 11 in Agriculture, 38 in Engineering and 19 in Medicine.

Regional Variation in Technical Education

For the purpose of the study, the country is divided into five regions as below:

(*i*) *Northern Region:*	Haryana, Punjab, Chandigarh, Delhi, Rajasthan, Uttar Pradesh, Madhya Pradesh, Himachal Pradesh and Jammu & Kashmir.

(*ii*) *Western Region:*	Gujarat, Maharashtra, Goa, Daman & Diu and Dadra & Nagar Haveli.
(*iii*) *Southern Region:*	Andhra Pradesh, Kerala, Karnataka, Tamil Nadu, Pondicherry and Lakshadweep.
(*iv*) *Eastern Region:*	Bihar, Orissa, West Bengal, Andaman & Nicobar Islands.
(*v*) *North-Eastern Region:*	Assam, Manipur, Meghalaya, Nagaland, Tripura and Arunachal Pradesh.

Analysis

To measure the regional variation in the spread of technical education, intake per million of population has been considered at three points of time, namely, 1961, 1971 and 1975. As regards intake only intake in B.Sc. in Agriculture, Degree in Engineering and M.B.B.S. have been considered in the study as these are the most important categories in the field of agricultural, engineering and medical education. Annexures I and II indicate the regional spread of these educational facilities as measured by intake per million of population and percentage distribution of intake in Agriculture, Engineering and Medical at three points of time—1961, 1971 and 1975. An analysis of three types of education is attempted below:

Agriculture

The intake per million of population works out to 15 in 1961, 12 in 1971 and 11 in 1975. The share of Northern region in total intake came down from 57% in 1961 to 47% in 1975. Its intake per million of population also fell from 21 to 15 during the period. Similar trend is noticed for the North-Eastern and Eastern regions. But other two regions i.e. Western and Southern regions have shown a rising trend in the share in total admissions. The share of Western region in total intake rose from 19 to 28 per cent in 1961-75. The intake per million of population similarly rose from 20 to 25 during the decade 1961-1971 but fell to 22 in 1975. In Southern region the proportion rose from 12 to 16.5 of total intake while the intake per million of population remained stationary at 7 during the period 1961-75.

Engineering

Engineering education has expanded largely in the Western and the Southern regions. In 1975 of 22,454 admisssions, about 13,000 or 58 per cent were in these two regions alone. The intake per million population works out to 57 in Western region and 55 in the Southern region as against 38 all India figure. The position is poor in the Northern and the Eastern regions i.e. 27 per million each.

The Southern region is highly developed in engineering (degree) education. One of three students admitted was from this region. Its share in total intake rose from 32 to 36% during the fifteen years 1961-75 and the intake per million of population went up from 40 to 55 during the same period.

The position is similar in Western region as the intake per million in the region grew from 43 to 57 during 1961-75. Northern region accounted throughout the period for around one-fourth of the total intake while its intake per million of population slightly increased from 23 to 27 in the same period.

The Eastern region witnessed a sharp fall in the share of admission during the decade 1961-71. Its share in total intake fell from 22 to 12 per cent and the intake per million was similarly reduced from 31 to 18 during 1961-71. The position, however, improved in 1975 to 16 per cent of the total intake (22,454) and intake of 27 students per million of population.

Medical

Like engineering education, medical education facilities are also concentrated in the Western and the Southern regions. These two regions, account for about half of the total intake (11,273). The intake per million of population works out to 26 in Western region and 22 in the Southern region as against 19 for all India. In the remaining three regions, the availability of medical educational facilities are much less as judged by the intake per million population, which is 15-16.

The Southern region, accounted for about one-third of the total intake. During the decade 1961-1971, the intake per million of population grew from 20 to 32. In 1975, however, the percentage share in intake slightly fell to 29 and intake per million drastically fell to 22.

The share of Western region in the total intake shows a rising trend. It rose from 14 to 20% during fifteen years. The intake per million of population also rose from 16 to 30 during the decade 1961-71, but came down to 26 in 1975.

The share of Northern region, however, remained steady at 30% during the period 1961-75. The intake per million of population workes out to 13, 18 and 16 in 1961, 1971 and 1975 respectively. It remained below the all-India figure during 1961-75.

The Eastern region accounted for 20% of the total intake in 1961. The share came down to 15% in 1971 and rose to 18% in 1975. The intake per million of population remained low at 14-15 during 1961-75.

In short, it may be observed that agricultural education is concentrated mostly in Northern region and the engineering and the medical education facilities are in Southern and Western region while North-Eastern and Eastern regions remain deficient in these technical educational facilities and need attention.

Intake Per Million of Out-turn

It may be argued that intake per million of population is not a good basis of the study of regional distribution of technical educational facilities. So an attempt is made to study the ratio of actual intake in these three disciplines to the out-turn of matriculates/higher secondary. The total out-turn of matriculation/higher secondary was 1.6 million in 1970-71 (1.3 million matriculates and 0.3 million higher secondary school leavers). The educational qualification for entry into these three disciplines being higher secondary, it is reasonable to relate the intake of 1971-72 with the out-turn of 1970-71. The intake per million of out-turn works out to 4,230 in agriculture, 11,390 in engineering and 7,600 in medical education. The regions arranged in ascending order of their ranks are as below:

Table 2

INTAKE PER MILLION OF OUT-TURN OF HIGHER SECONDARY/MATRICULATES IN TECHNICAL EDUCATION IN DIFFERENT REGIONS

Region	*Agriculture*	*Region*	*Engineering*	*Region*	*Medical*
Western	(7,900)	Western	(17,900)	Southern	(12,000)
Northern	(5,100)	Southern	(16,400)	Western	(9,300)
Southern	(2,800)	Northern	(8,600)	North-Eastern	(6,400)
North-Eastern	(1,900)	Eastern	(6,900)	Eastern	(5,500)
Eastern Region	(1,600)	North-Eastern	(5,300)	Northern	(5,500)

N.B. Figures in bracket are intake per million of out-turn of matriculates/higher secondary.

The above Table shows that Western region occupies the first rank in agriculture and engineering while second in medical education. Southern region occupies first position in Medical, second in Engineering and third in agriculture. Northern region occupies the second place in agriculture, third in Engineering and the lowest position in medical discipline. Eastern and North-Eastern region take the lower position.

Degree of Variation

It would be interesting to study the degree of variation between two series i.e. intake per million of out-turn and intake per million of population in 1971. The following Table indicates the Range variation discipline-wise between the two series:

Table 3

Discipline	*Range variation between intake per million of*	
	out-turn%	*population%*
Agriculture	400	525
Engineering	237	338
Medical	117	113

The range variation indicates lack of balanced growth of technical educational facilities over the regions.

Unemployment Aspect

Uneven growth of educational facilities between regions have resulted in manpower imbalances. A study of the job seekers as indicated by the Live Register data maintained by Employment Exchanges will be useful. 9,196 graduates/post-graduates in agriculture, 18,385 in engineering and 8,570 graduates/post-graduates in medicine were seeking jobs through employment exchanges as on 31st December 1976. The proportion of job-seekers in agriculture discipline was the highest in Northern region (36%) followed by Western region (31%). In Engineering discipline, Southern region (41%) followed by Eastern region (30%) takes the lead. Besides Engineering, Southern region ranks at the top in medicine also as 1/2 of the job seeking graduates in medicine were from this region followed by Northern region (32%).

Agricultural education is concentrated in Northern and Western regions of India, three-fourth of job seekers—agricultural graduates belong to these two regions only. Concentration of medical and Engineering education in Southern region is reflected in the high proportion of job seekers from this region—41% in engineering and 51% in medicine. Very low/negligible proportion of job seekers in the North-Eastern region similarly reflects the poor share of the region in the higher technical education. In fact the States of this region have complained of shortages of high level technical manpower.

Suggestions

It is a moot point whether every State or region should be self-sufficient in so far as the availability of technical manpower is concerned. For agricultural and medical personnel, knowledge about local conditions and language very much contributes to proper delivery of their services. On the other hand, it cannot also be denied that there are certain economics of scale involved in provision of technical education which suggests bigger institutions rather than smaller ones suitable for a region or a State. Further, the need for attaining a high quality in technical education (and therefore need for well-equipped teachers) is another point suggesting a pooling of technical education of facilities at least at the regional level. In short, cost and benefit aspects of opening local technical education facilities in a particular State/region vis-a-vis sharing such facilities located in some other State or region may deserve proper attention from policy makers. It is needless to say that prior to any expansion of technical education the existing facilities should be reviewed from the efficiency angle (i.e. whether existing facilities are upto the mark and products of the institutions are of satisfactory standard) and the availability of properly trained teaching staff ensured.

On the other hand, in order to reduce intra-regional or inter-regional imbalances in the supply of technical manpower artificial barriers on the inter-region/interstate mobility imposed through language or domiciliary restrictions should be removed as far as possible.

No doubt this would require a broader or national perspective and delinking technical education policy from issues other than socio-economic ones. Medical colleges and Engineering colleges should be looked upon as industry rather than as mere status symbols of the States.

Lastly de-facto the technical education is in the concurrent list in some form or other and there are All India Council of Technical Education, (Ministry of Education), Indian Council of Agricultural Research (ICAR), Medical Council of India to regulate the admissions etc. It is suggested that these organisations should have a more effective control on technical education with a shift in emphasis towards region-wise balanced development based on disaggregated manpower information by States, industries, specialisation and educational levels.

Annexure I

INTAKE PER MILLION OF POPULATION IN AGRICULTURE, ENGINEERING AND MEDICAL EDUCATION—REGION-WISE IN 1961, 1971 AND 1975

Region	*1961*				*1971*				*1975*			
	Population	*Intake per million*			*Population*	*Intake per million*			*Population*	*Intake per million*		
	(mill.)	*Ag.*	*Eng.*	*Med*	*(mill.)*	*Ag.*	*Eng.*	*Med.*	*(mill.)*	*Ag.*	*Eng.*	*Med.*
Northern	154.2	24	23	13	191.4	17	28	18	207.50	15	27	16
North-Eastern	14.2	6	17	15	19.5	5	13	15	21.8	4	15	15
Eastern	99.0	7	31	14	122.5	4	18	15	132.7	4	27	15
Western	60.9	20	43	16	77.9	25	57	30	85.3	22	57	26
Southern	110.6	7	40	20	135.6	8	44	32	146.8	7	55	22
ALL INDIA	439.1	15	32	16	547.1	12	33	22	594.5	11	38	19

N.B. (*i*) *Population total will not tally.*

(*ii*) *Since intake for 1961 in Engineering education is not available the intake capacity for 1960-61 is utilised for estimation.*

(*iii*) *Intake in Agriculture for 1975 is not available. Hence the data for 1972-73 is utilised.*

(*iv*) *Population figure for 1975 is taken from the Expert Committee on Population Projection—Registrar General of India.*

Annexure II

PERCENTAGE DISTRIBUTION OF INTAKE IN AGRICULTURE, ENGINEERING AND MEDICAL EDUCATION AT DEGREE LEVEL IN 1961, 1971 AND 1975—REGION-WISE

Region	*Percentage distribution of intake*								
	Agriculture			*Engineering*			*Medical*		
	1961	*1971*	*1975*	*1961*	*1971*	*1975*	*1961*	*1971*	*1975*
Northern	56.8	47.0	46.9	25.6	29.3	24.7	30.2	28.2	30.2
North-Eastern	1.4	1.3	1.2	1.7	1.4	1.4	3.1	2.5	2.8
Eastern	10.9	7.5	7.5	22.0	12.1	16.1	20.0	14.6	18.1
Western	19.2	29.1	27.9	18.8	24.4	21.6	14.4	18.9	19.9
Southern	11.7	15.1	16.5	31.9	32.8	36.2	32.3	35.8	29.1
ALL INDIA	100.0 (6,392)	100.0 (6,758)	100.0 (6,590)*	100.0 (13,858)**	100.0 (18,197)	100.0 (22,454)	100.0 (6,846)	100.0 (12,148)	100.0 (11,273)

N.B. (*i*) *Figures in parenthesis relate to total intake.*

**In Agriculture—the intake 6,590 relate to 1972-73.*

*** In Engineering the figure 13,858 related to admission capacity in 1960-61.*

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Regional Imbalance in the Growth of Higher Education in India

M.R. RABINDRANATHAN

The heterogeneous growth of higher education* in various disciplines in India presents wide differences among various states. These differences are mainly due to the variation in the educational policies being adopted by various states. The total elimination of these differences is neither possible nor desirable because the growth of education in each state has significant bearing upon the local conditions and problems. As different states in the country have different systems of education it is but natural that in the process of development the higher education gets regionally imbalanced. The disproportionate growth of higher education in different states ultimately results in the imbalanced multiplicity of educated unemployment.

The unemployment problem of the out-turn of higher education has already assumed alarming proportions in different states in varying degrees. The problem not being exclusively a state responsibility the task of finding an ever lasting solution to it becomes increasingly difficult unless proper coordination of education in various states is effected and steps are taken to minimise the regional imbalance. The educational policies relating to different states will have to be framed keeping in view of the national necessity for successful coordination. Moreover, these policies should also reflect the realisation of the joint responsibility of various states in solving the problem of unemployment. A system of higher education dominated by regional imbalance does not suit to the Indian conditions as the different states in the country having different educational policies and programmes are not self sufficient for providing adequate employment opportunities to their respective educated manpower. The regional imbalance in the growth of higher education is, therefore, a matter of serious concern from all points of view. Analysis of the data* available for the period from 1966-67 to 1975-76 highlights the regional imbalance in the growth of enrolment for higher education.

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*Higher Education here means University and Collegiate education at all levels excluding Pre-University/Intermediate and Pre-Professional levels.

General Trend

The enrolment for university education at the graduate level increased from 10.6 lakhs in 1966-67 to 17.5 lakhs in 1970-71 at the average annual compound rate of 13.3% and further increased from 1970-71 to 21.5 lakhs in 1975-76 at the reduced rate of 4.2% while the enrolment at the post-graduate level increased from 1.04 lakhs in 1966-67 to 1.61 lakhs in 1970-71 at the average annual compound rate of 11.6% and further shot up from 1970-71 to 2.2 lakhs in 1975-76 at the reduced rate of 6.4% and the enrolment at the research level increased from 10.4 thousands in 1966-67 to 13.3 thousands in 1970-71 at the average annual compound rate of 6.4% and further increased from 1970-71 to 18.4 thousands in 1975-76 at an enhanced rate of 6.7%. During the period from 1966-67 to 1975-76 the enrolment at the graduate level got doubled, that at the post-graduate level got slightly more than doubled and at the research level the enrolment increased by slightly more than three-fourth. While the enrolment at the graduate level continuously increased every year during the period from 1965-66 to 1975-76 the enrolment at the post-graduate level kept on increasing upto 1974-75 and decreased from 2.34 lakhs in that year to 2.20 lakhs in 1975-76. The relative growth of post-graduate enrolment showed upward trend upto 1974-75 and thereafter the trend got reversed. The relative growth of research enrolment showed downward trend during the period under review.

Among various states in the country West Bengal had the highest enrolment for university education at the graduate level both in 1966-67 and 1975-76, the enrolment being 1.63 lakhs in 1966-67 and 3.11 lakhs in 1975-76. Next to West Bengal in this respect in 1966-67 was Uttar Pradesh closely followed by Madhya Pradesh, Maharashtra in this very order; all of them having more than one lakh enrolment at the graduate level. In 1975-76 West Bengal was followed in this respect by Uttar Pradesh, Maharashtra Punjab, Gujarat, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Karnataka in this very order; the enrolment being 2.84 lakhs. 2.69 lakhs, 1.57 lakhs, 1.56 lakhs, 1.46 lakhs, 1.41 lakhs, 1.35 Lakhs and 1.30 lakhs respectively.

In the growth of enrolment at the graduate level the relative position among states improved from 1966-67 to 1975-76 in the case of Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Punjab, Rajasthan and Tamil Nadu while the position remained the same with Assam, Jammu & Kashmir, Orissa, Uttar Pradesh, West Bengal and declined in the case of Bihar, Kerala and Madhya Pradesh.

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*Source of data—UGC.

As regards the enrolment at the post-graduate level, Uttar Pradesh had the highest enrolment both in 1966-67 and 1975-76, the enrolment being 27.1 thousands and 58.4 thousands respectively.

The relative position among various states in the country as regards the growth of post-graduate enrolment improved from 1966-67 to 1975-76 in the case of Andhra Pradesh, Karnataka, Maharashtra, Orissa, Punjab and Tamil Nadu while the position remained the same in the case of Jammu & Kashmir, Rajasthan and Uttar Pradesh and declined in the case of Assam, Bihar, Gujarat, Kerala, Madhya Pradesh and West Bengal.

The enrolment at the research level was the highest in Uttar Pradesh in 1966-67 as well as 1975-76, the enrolments being 2.7 thousands and 4.5 thousands respectively. In the growth of research enrolment from 1966-67 to 1975-76 the relative position among various states in the country improved in the case of Andhra Pradesh, Assam, Kerala, Punjab, Tamil Nadu while the relative position remained the same with Gujarat, Jammu & Kashmir, Maharashtra, Uttar Pradesh and declined in the case of Bihar, Karnataka, Madhya Pradesh, Orissa, Rajasthan and West Bengal.

The enrolment for higher education in the country during 1975-76 was 24.26 lakhs and the estimated population in the age group 17-22 years in that year was slightly more than 70.9 millions thereby having the average enrolment per thousand of the population in the age group as 34. The enrolment for higher education during 1975-76 was the highest in Uttar Pradesh (3.51 lakhs) followed by West Bengal (3.19 lakhs), Maharashtra (3.06 lakhs), Gujarat (1.74 lakhs), Tamil Nadu (1.61 lakhs), Andhra Pradesh (1.58 lakhs), Madhya Pradesh (1.56 lakhs), Karnataka (1.42 lakhs), Bihar (0.99 lakhs), Rajasthan (0.97 lakhs), Punjab (0.96 lakhs), Kerala (0.79 lakhs), Haryana (0.59 lakhs), Orissa (0.44 lakhs), Assam (0.36 lakhs), Jammu & Kashmir (0.21 lakhs), Himachal Pradesh (0.12 lakhs), Tripura (0.08 lakhs), Manipur (0.06 lakhs), Meghalaya (0.04 lakhs), and Nagaland (0.004 lakhs), in this very order.

The enrolment for higher education per 1000 of population in the age group 17-22 years during 1975-76 was the highest in the Punjab (58) followed by West Bengal (56), Gujarat (54), Maharashtra (51), Manipur (49), Haryana (47), Tripura (41), Karnataka (39), Jammu & Kashmir (35), Andhra Pradesh (32), Tamil Nadu (31), Uttar Pradesh (31), Himachal Pradesh (29), Kerala (29), Rajasthan (29), Madhya Pradesh (28), Meghalaya (28), Assam (18), Orissa (16), Bihar (13) and Nagaland (7) in this very order.

As regards the Union Territories the enrolment for higher education per 1000 of population in the age group 17-22 years was the highest in Chandigarh (285), followed by Delhi (134), Goa, Daman & Diu (39), Pondicherry (39), Andaman & Nicobar Islands (22), and Arunachal Pradesh (2).

The picture of regional imbalance will be more clear and revealing only if the discipline-wise position is analysed separately so as to identify the specific areas affected by regional imbalance in each discipline. This is necessary because the growth of higher education in different disciplines always registered different rates of growth.

Arts

The enrolment at the graduate level in Arts faculty increased from 4.09 lakhs in 1966-67 to 7.30 lakhs in 1970-71 at the average annual compound rate of 15.5% and from 1970-71 it further increased to 9.35 lakhs in 1975-76 at the reduced rate of 5.1% while at the post-graduate level the enrolment increased from 57.6 thousands in 1966-67 to 89.9 thousands in 1970-71 at the average annual compound rate of 11.8% and from 1970-71 to 1.21 lakhs in 1975-76 at the reduced rate of 6.1%. The enrolment at the research level increased from 4.87 thousands in 1966-67 to 6.53 thousands in 1970-71 at the average annual compound rate of 7.6% and further increased from 1970-71 to 8.39 thousands in 1975-76 at the average annual compound rate of 5.2%.

The growth of enrolment in this faculty showed varying trends in various states during the period under review. The enrolments at all levels in Bihar during 1975-76 were less than the corresponding enrolments in the state during 1966-67. The enrolment at the graduate level in Assam during 1975-76 was more or less the same as the corresponding enrolment during 1966-67. The enrolments at the graduate and the post-graduate levels in Kerala during 1975-76 were less than the corresponding enrolments during 1970-71. The enrolment at the post-graduate level in West Bengal during 1975-76 was less than the corresponding enrolment in 1970-71. The enrolment at the research level in Orissa during 1966-67 was much more than its enrolment in 1975-76.

Science

The Science enrolment at the graduate level in the country increased from 2.83 lakhs in 1966-67 to 4.69 lakhs in 1970-71 at the average annual compound rate of 13.4% and further decreased to 4.12 lakhs in 1975-76 at the average annual compound rate of 2.5%. The enrolment at the post-graduate level increased from 23.7 thousands in 1966-67 to 39.1 thousands in 1970-71 at the average annual compound rate of 13.3% and further increased to 44.4 thousands in 1975-76 at the rate of 2.5% while the enrolment at the research level increased from 3.7 thousands in 1966-67 to 4.2 thousands in 1970-71 at the average annual compound rate of 3.5% and further increased to 6.3 thousands in 1975-76 at the rate of 8.6%. It has been noted that the Science enrolment at the graduate level kept on increasing every year upto 1970-71 and thereafter decreased every year upto 1974-75 and showed slight increase from 1974-75 to 1975-76. The enrolment in 1975-76 (4.1 lakhs) was in fact considerably less than the corresponding enrolment in 1969-70 (4.5 lakhs). While the enrolment at the graduate level increased by about 5 thousands from 1974-75 to 1975-76 the enrolment at the post-graduate level which continuously increased annually upto 1974-75 abruptly decreased in 1975-76 by slightly less than 5 thousands. The enrolment at the research level also decreased from 1974-75 to 1975-76.

The Science enrolments at the graduate level in Gujarat and Punjab including Haryana during 1975-76 were less than the corresponding enrolments in 1966-67. In 1975-76 all states except Andhra Pradesh and Tamil Nadu had less enrolment for Science at the graduate level as compared to the corresponding enrolments in 1970-71. The enrolments at the post-graduate level in Jammu & Kashmir, Kerala and West Bengal during 1975-76 were less than the corresponding enrolments in 1970-71 and the research enrolment in Bihar during 1975-76 was less than the corresponding enrolment in 1970-71.

Commerce

The enrolment for Commerce at the graduate level increased from 1.14 lakhs in 1966-67 to 2.37 lakhs in 1970-71 at the average annual compound rate of 20.1% and further increased to 3.83 lakhs in 1975-76 at the rate of 10.1%. The enrolment at the post-graduate level increased from 9.4 thousands in 1966-67 to 15.0 thousands in 1970-71 at the average annual compound rate of 12.3% and thereafter shot up to 27.7 thousands in 1975-76 at the rate of 13.1% while the research enrolment increased from 4.1 hundreds in 1966-67 to 4.6 hundreds in 1970-71 at the rate of 2.8% and further increased to 5.6 hundreds in 1975-76 at the rate of 4.0%.

In Madhya Pradesh, Uttar Pradesh, West Bengal and Delhi the enrolments at both graduate and post-graduate levels increased disproportionately during the period from 1970-71 to 1975-76 resulting in significant decline in the relative growth of post-graduate enrolment. In West Bengal while the enrolment at the graduate level increased appreciably the enrolment at the post-graduate level decreased though marginally during the period from 1970-71 to 1975-76.

Education

The enrolment for Education at the graduate level increased from 32.5 thousands in 1966-67 to 51.7 thousands in 1970-71 at the average annual compound rate of 12.3% and further increased to 68.4 thousands in 1975-76 at the average annual compound rate of 5.8% and at the post-graduate level the enrolment increased from 1.9 thousands in 1966-67 to 2.7 thousands in 1970-71 at the average annual compound rate of 8.5% and thereafter increased to 3.8 thousands in 1975-76 at the rate of 7.4%. The enrolment at the research level increased from 2.2 hundreds in 1966-67 to 2.5 hundreds in 1970-71 and 3.3 hundreds in 1975-76.

The enrolments at the graduate level in Jammu & Kashmir and Kerala during 1975-76 were less than the corresponding enrolments in 1966-67. The post-graduate enrolment for Education in Delhi during 1975-76 was less than the corresponding enrolment in 1966-67. The enrolments at the research level in Madhya Pradesh and Rajasthan during 1975-76 were less than the corresponding enrolments in 1966-67.

The growth of research enrolment during the period under review was notably inconsistent. The research enrolment in Madhya Pradesh was 29 in 1966-67, 3 in 1970-71 and 21 in 1975-76. Maharashtra had 54 research students for Education during 1966-67 and it increased to 58 in 1975-76 after reducing to 37 in 1970-71. The research enrolment in Uttar Pradesh increased from 26 in 1966-67 to 76 in 1970-71 and decreased to 43 in 1975-76.

Engineering/Technology

The enrolment at the graduate level decreased from 84.2 thousands in 1966-67 to 80.6 thousands in 1970-71 at the average annual compound rate of 1.1% and thereafter increased to 85.3 thousands in 1975-76 at the rate of 1.1%. Both at the post-graduate and the research levels the enrolments increased during the period from 1966-67 to 1975-76, the post-graduate enrolment having increased from 2.2 thousands in 1966-67 to 4.5 thousands in 1975-76 and the research enrolment having increased from 3.4 hundreds in 1966-67 to 6.7 hundreds in 1975-76.

The enrolments at the graduate level during 1975-76 in Andhra Pradesh, Assam, Bihar, Jammu & Kashmir, Kerala, Madhya Pradesh, Rajasthan, Uttar Pradesh, West Bengal and Delhi were less than the corresponding enrolments in these states during 1966-67. The enrolments at the post-graduate and the research levels in West Bengal and the research enrolment in Bihar during 1975-76 were less than the corresponding enrolments in 1966-67.

Medicine

The enrolment at the graduate level increased from 61.7 thousands in 1966-67 to 79.8 thousands in 1970-71 at the average annual rate of 6.6% and further increased to 91.7 thousands in 1975-76 at the rate of 2.8% while the enrolment at the post-graduate level increased from 3.9 thousands in 1966-67 to 4.6 thousands in 1970-71 at the rate of 4.0% and further shot up to 8.3 thousands in 1975-76 at the enhanced rate of 12.7%. The enrolment at the research level decreased from 1.6 hundreds in 1966-67 to 1.3 hundreds in 1970-71 and 1.1 hundreds in 1975-76.

The enrolments at the post-graduate level during 1975-76 in West Bengal and Delhi were less than the corresponding enrolments in 1966-67. The enrolments at the research level during 1975-76 in Karnataka, Madhya Pradesh, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh were less than the Corresponding enrolments in 1966-67. The enrolments at the graduate level during 1975-76 in Gujarat, Karnataka, Orissa & Punjab were less than their corresponding enrolments in 1970-71. The enrolments at the post-graduate level during 1975-76 in Assam, Bihar, Gujarat and Delhi were less than their corresponding enrolments in 1970-71.

Agriculture

The enrolment at the graduate level decreased from 22.9 thousands in 1966-67 to 22.4 thousands in 1970-71 and thereafter increased to 23.8 thousands in 1975-76. While the enrolment at the post-graduate level increased from 3.4 thousands in 1966-67 to 3.9 thousands in 1970-71 and 4.6 thousands in 1975-76 the enrolment at the research level increased from 6.0 hundreds in 1966-67 to 8.9 hundreds in 1970-71 and further increased to 1.5 thousands in 1975-76.

The enrolments at all levels in Bihar during 1975-76 were less than its corresponding enrolments in 1966-67. The enrolments at the graduate level during 1975-76 in Andhra Pradesh, Jammu & Kashmir, Madhya Pradesh, Orissa, Uttar Pradesh and West Bengal were less than their corresponding enrolments in 1966-67. The enrolments at the post-graduate level during 1975-76 in Gujarat, Kerala, Orissa, Tamil Nadu and Delhi were less than their corresponding enrolments in 1966-67.

Veterinary Science

The enrolment at the graduate level decreased from 5.8 thousands in 1966-67 to 5.4 thousands in 1970-71 and further decreased to 5.3 thousands in 1975-76 while the enrolment at the post-graduate level increased from 5.2 hundreds in 1966-67 to 5.8 hundreds in 1970-71 and 7.0 hundreds in 1975-76. The enrolment at the research level increased from 76 in 1966-67 to 167 in 1970-71 and 232 in 1975-76.

The enrolments at the graduate and the post-graduate levels during 1975-76 in Madhya Pradesh and Uttar Pradesh were less than their corresponding enrolments in 1966-67. The enrolments at the graduate and the research levels during 1975-76 in Bihar were less than its corresponding enrolments in 1966-67. The enrolments at the post-graduate and research levels in Rajasthan during 1975-76 were less than its corresponding enrolments in 1966-67. The enrolments at the graduate level in Andhra Pradesh, Kerala and Orissa during 1975-76 were less than their corresponding enrolments in 1966-67. The enrolments at the post-graduate level during 1975-76 in Punjab and Tamil Nadu were less than their corresponding enrolments in 1966-67.

Law

The enrolment at the graduate level increased from 43.4 thousands in 1966-67 to 68.7 thousands in 1970-71 and further shot up to 1.4 lakhs in 1975-76. While the enrolment at the post-graduate level increased from 1.1 thousands in 1966-67 to 1.3 thousands in 1970-71 and 2.7 thousands in 1975-76 the enrolment at the research level increased from 64 in 1966-67 to 104 in 1970-71 and 108 in 1975-76.

The enrolments at the post-graduate level in Bihar and Madhya Pradesh during 1975-76 were less than their corresponding enrolments in 1966-67. The research enrolment in Kerala during 1975-76 was less than its corresponding enrolment in 1966-67.

Conclusion

The higher education in India is thus excessively regionally imbalanced in its growth in various disciplines. The growth of higher education in different disciplines has yet to be coordinated with the ultimate aim of attaining higher objectives. About 70% of the enrolment for higher education is in Humanities and Social Sciences, the remaining 30% being for Science and Science-based faculties. Majority of the states in the country had more enrolment in the Science and Science-based faculties, at one level or the other, a decade ago than at present. This setback in the growth was comparatively much less in Humanities and Social Sciences. While the faculty of Pure-Science suffered the major set back the faculty of Commerce gained momentum in its growth. Acceleration in the growth of enrolment at all levels in the science and science-based faculties is hence desirable in the years to come.

A close scrutiny of the pattern of growth of enrolments in various disciplines in different states reveals that not even a single discipline is unaffected by the regional imbalance caused presumably due to lack of proper planning and co-ordination. In other words, in no state in the country the enrolment appears to increase or decrease according to any set pattern or well defined norms. Supposedly, lack of proper planning and co-ordination has left the enrolment—growth unchecked all these years in all states in the country. While acceleration in the growth of enrolment is necessitated due to the multiplicity of the general population, adoption of the policy of selective admission to different courses of study is advisable in order to promote the standard of education and also to check the regional imbalance. Again, checking of the regional imbalance is emphasised in order to solve the 'unemployment problem' of the 'educated class'. As this problem has to be tackled on a national basis the regional disparities in the growth of education should not be allowed to impede the task of solving it. Moreover, removal of the regional disparities in the growth of education is essential for maintaining uniformity of standards as well.

In order to realise the effective co-ordination of the uneven growth of enrolment in various disciplines and also to check the unstable growth in different states it is essential to constitute a 'national-agency' vested with powers to implement such policies and programmes as may be chalked out for the purpose. It is here one feels pity for the limited powers of the University Grants Commission which was set up for co-ordinating the development of higher education in the country. No wonder, the different educational policies being adopted by different universities in various states can only add to the intensity of the problem of regional imbalance. If the regional imbalance is to be effectively controlled the autonomy granted to universities should not stand in the way of implementing the national policies formulated for the purpose. The status quo regarding the autonomy of universities has to be changed suitably in order to make the 'national-agency' legally competent to streamline the system of higher education effecting the checking of regional imbalance inherent in the system. It is, however, desirable that the University Grants Commission is vested with more powers in order to play the important role of the 'national-agency' mentioned herein.

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An Analytical Study of Semester System of Education

M. P. GUPTA

All the Commissions and Committees which examined system of education in India have invariably expressed their deep concern over the pernicious domination of the external, annual and centralised examination in the traditional system. This has been replaced by new system of education called semester/trimester system with internal, course credits, short terms and continuous evaluation by teachers themselves in agricultural universities and national institutes. The University of Udaipur was pioneer in adopting semester system as early as 1964, whereas in most of the agricultural universities trimester system is in operation. During the first All India Agricultural Education Conference held at Bangalore in October (1969), opinions were expressed by representatives of several universities in favour of semester system over trimester system. Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur has shifted from trimester to semester system. The Commission Paper I presented to World Conference on Agricultural Education and Training (1970) pointed out the need of conducting objective studies of this new system of education, before it is followed by other universities. However adequate empirical data have not been reported so far, about the working of semester system as a whole and particularly of its various aspects. Accordingly, the present study was undertaken with the following specific objectives:

(i) To analyse the functioning of various aspects of semester system.

(ii) To bring out the scope of improvement in various aspects of semester system.

Scope of the Study

The study will, *inter alia,* portray the effectiveness of various aspects of semester system as also pinpoint the scope of improvement in its various aspects. These results can be effectively utilized to suggest reforms to make semester system of education for its definite success. Nevertheless, the facts, so revealed can be surmised to help the Education Commission (1964-66) who had expressed the hope of extending the new system of education to the teaching universities at no distant date.

Review of Literature

No empirical study is reported on semester system so far. A brief review is, however, made of some opinion expressed on the new system of education and more specifically on semester system.

The All India Conference on Agricultural Education (1969) held at Bangalore expressed doubts about lowering of academic standards due to the introduction of new system of education. The Commission Paper I (1970) presented at the World Conference on Agricultural Education and Training, reported that it would be difficult and invidious to pronounce in favour of any individual system of education, as each has its merits and demerits. In the proceedings of the Second Convention of the Association of Indian Agricultural Universities held at Pantnagar from April 20-23, 1971. Singh listed the advantages of semester over trimester as:

(1) More time for teaching on account of longer duration of semester.
(2) Lessened registration process.
(3) Time to adjust students' studies suffered because of disturbances.
(4) Semesters are in line with main agricultural seasons—kharif and rabi.

Tapindra Singh reported in 'The Tribune' (2nd December, 1976) that the H.P. Board of School Education had given a trial to semester system and is finding favour. While, examining the new system, Bhatia reported in the 'Times of India' (15th May, 77) that the assessment of students in periodical tests has been given primacy in university examinations. Ramalingam stated in the 'Sunday Standard' (11th June, 78) that the complete elimination of external examination system under Indian conditions is not desirable. So the views differ as to the introduction of semester system as an improvement over trimester and traditional systems of education. Thus, there is hardly any gain in saying the fact that no system of education, *per se* would be all perfect and free from defects.

Methodology

To analyse objectively, both rating and ranking scales were employed to obtain verified results about working of various aspects of the semester system. The scales were administered to both segments i.e. teachers and students having minimum of 3 years' experience under semester system. They were selected through stratified random sampling technique according to one-third of the population of teachers and students in the College of Agriculture, Udaipur. In this way 25 responses of teachers and 43 responses of students under the semester system from Agriculture College, Udaipur University, Udaipur, were obtained for this investigation.

Construction of Scales

For this purpose, 15 aspects of semester system were ascertained after a good deal of consultation through discussion with educationists and review of relevant literature. These were sent to 20 senior teachers to judge their suitability and on the basis of their judgements, 9 aspects supported by 75 per cent suitability or more were chosen for construction of scales to analyse the semester system.

In accordance with steps prescribed by Likert, R. (1932) in the construction of the rating scale, the following procedure was followed:

(1) The rating scale was prepared by putting the aspects of semester system on left side and 5 point scale i.e. (i) excellent, (ii) very good, (iii) good, (iv) fair and (v) poor on the top of the page.
(2) Operational dimensions of the aspects and detailed instructions were given on the first page to enable the respondents to record their responses objectively.
(3) The respondents were asked to record their opinions about the functioning of each aspect in terms of its effectiveness by putting check (√) in any one of the five columns.
(4) Scoring of ratings under each aspect was done on the basis of responses given by the respondents from 5 to 1 i.e., from excellent to poor.
(5) On the basis of the scores, so obtained by each aspect and respondent, mean scores were worked out separately for all aspects; and the teachers and students categories.
(6) The aspects were assigned 1 to 9 positions with respect to maximum to minimum mean scores worked out with different categories of respondents (Table 1).

Further, the ranking scale was used to measure the scope of improvement in various aspects of semester system. This was done by keeping the various aspects on one side of page and asking the respondents to assign ranks in order of scope of improvement against each aspect, considering No. 1 to be the aspect that requires the maximum improvement and No. 9 to be the aspect that requires the least improvement. Scoring of rankings under each aspect was done on the basis of ranks assigned by respondents i.e., 9 to 1 scores to aspects requiring maximum to minimum improvement. The main scores were calculated for all aspects and the teachers and students categories. The rank values were worked out on the basis of maximum to minimum mean scores obtained in terms of scope of improvement (Table 2).

Table 1

VARIOUS ASPECTS OF SEMESTER SYSTEM AND THEIR EFFECTVENESS IN FUNCTIONING

Sr. No.	*Aspects*	*Teachers*	*Students*	*All Respondents*
		Mean score & position	*Mean score & position*	*Mean score & position*
1.	Role of teacher	(2.12)6	(1.28)7	(1.59)7
2.	Role of student	(1.64)8	(2.49)4	(2.18)5
3.	Curriculum	(1.24)9	(1.95)6	(1.69)6
4.	Teaching-aids & equipment	(1.96)7	(0.67)9	(1.15)9
5.	Physical facilities	(2.44)4	(0.91)8	(1.47)8
6.	System of examination	(3.20)1	(2.47)5	(2.74)3
7.	Grading system	(2.20)5	(2.60)3	(2.46)4
8.	Games & sports	(2.96)2	(3.28)1	(3.16)1
9.	Scientific societies	(2.56)3	(3.26)2	(3.00)2

Figures on brackets indicate positions in terms of effectiveness.

Table 2

VERIOUS ASPECTS OF SEMESTER SYSTEM AND THEIR SCOPE OF IMPROVEMENT

Sr. No.	*Aspects*	*Teachers*	*Students*	*All Respondents*
		Mean score & rank value	*Mean score & rank value*	*Mean score & rank value*
1.	Role of teacher	(5.36)5	(3.70)3	(4.31)4
2.	Role of student	(4.64)4	(4.70)5	(4.68)5
3.	Curriculum	(2.40)1	(4.23)4	(3.56)3
4.	Teaching-aids & equipment	(3.20)3	(2.67)1	(2.87)1
5.	Physical facilities	(3.12)2	(3.33)2	(3.25)2
6.	System of examination	(5.76)6	(5.14)6	(5.37)7
7.	Grading system	(6.16)8	(6.74)7	(5.06)6
8.	Games & sports	(6.72)9	(7.28)9	(7.07)9
9.	Scientific societies	(5.84)7	(7.21)8	(6.71)8

Figures on brackets indicate rank values in terms of scope of improvement.

Findings and Discussion

Effectiveness of various aspects of semester system: The rating of different aspects in terms of their effective functioning as done by teachers and students under the semester system has been worked out and presented in Table 1.

From this table it is evident that the 'games & sports' followed by 'scientific societies and social clubs' and then 'system of examination' have been worked out with all the respondents at first, second and third positions in effectiveness or considered healthier in operation under the semester system of education. The 'grading system' and 'role of a student' obtained 4th and 5th fairly well relative positions in effectiveness. The 'teaching-aids and equipment' indicated least effective (9th position) by all the respondents under the semester system requiring more improvements.

The 'role of a teacher' as perceived and levelled by teachers themselves was at 6th position against 7th position levelled by their taught. Similarly, where students levelled 4th position to their róle, the teachers levelled 8th position to students' role in effectiveness of teaching. The difference in levelling may be because of the element of levelling self higher or students' exaggeration of their role. The 'curriculum' has been worked out at 6th position in terms of its effectiveness with all the respondents. It points out overhauling and strengthening of curricula to cater the needs of students.

Scope of improvement in various aspects of semester system: The scope of improvement as reported by respondents in various aspects of the semester system is shown in Table 2.

It is evident from Table 2 that 'teaching-aids & equipment' followed by 'physical facilities' and 'curriculum' have obtained first three ranks by all the respondents indicating maximum scope of improvement which is further endorsed by their 9th, 8th, 7th positions for effective functioning in Table 1. However, teachers expressed their first concern about improvement in curriculum, whereas students demanded maximum improvement in 'teaching-aids & equipment'. The disparity in assigning priorities may be due to teachers' perception and students' need of the time. The 'games & sports' followed by 'scientific societies & social clubs' and then 'system of examination' required less improvements respectively (rank values=9th, 8th, 7th) which is further supported by their first three positions in terms of their effective functioning in Table 1. The teachers assigned fourth rank to the 'role of a student' for improvement, whereas students assigned third rank to 'teacher's role' in terms of improvements. The reasons for the poor performance of the 'teacher's role' are reported as (i) teaching is confined to class notes (ii) not stating the objectives of the lesson clearly and precisely (iii) spliting the class period into units as introduction, presentation, summary, question-answer time under the semester system. Both teachers and students were in agreement with relatively less scope of improvement in 'system of examination' (rank value=7), which is in further endorsed by its 3rd position as revealed in effectiveness of various aspects in Table 1.

Conclusion

The present study aimed at gathering research based information with respect to working of semester system of education, suggesting way outs to remove inadequacies in its various aspects so as to make the system a success. The study pointed out the adequate provision for students to participate in 'games & sports' and 'scientific societies & social clubs' under semester system. Further, the 'system of examination' was reported as less burdening on the part of teachers and students under semesters on account of adequate time for teaching and also keeps students occupied in academic pursuits throughout the year. 'Teaching-aids & equipment' of course is an aspect which has been worked out least effectively. It demands the provision of more teaching-aids and equipment to both the teachers and students and imparting training to them in the use and preparation of teaching-aids.

The study highlights the scope of development in agricultural curriculum to make it vocational-cum-job-oriented. This will help students to set on the farm after training rather than hankering after Government jobs. Further, the courses should be well organized and there should be a greater flexibility in choice of courses to meet the diversified needs of students.

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A Two Year Follow up Study on Internal Assessment

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The examination system in India is undergoing rapid changes from the traditional system of yearly public examinations. Several committees that examined the education system in general and examination system in particular have been unequivocal in their condemnation of the traditional system of examinations (University Education Commission, 1948; Secondary Education Commission, 1954; Education Commission, 1966). The above commissions as well as many an educationist suggested supplementing, if not supplanting, the present system by a process of internal assessment (Balabhadra Prasad, 1961; Bloom 1961; Paranjpye, 1961; Zaidi, 1961; Dongerkery, 1962; Bhaskara Reddy, 1970; Jagannatha Reddy, 1970; Neelakantam, 1970; Rama Sarma, 1970; Reddy, 1970; Misra, V.S., 1971; Tare, 1971; Vasantha Ramkumar, 1971; Hill, 1972; Jeebala Rao, 1975; Sampath, 1975). Many an enthusiast tried to introduce this system. But they met with several difficulties in the process, leading to student agitations and ultimate reversal to the old system (Misra, R.G., 1966). In spite of all its lapses, the traditional system had the one merit of being objective and it appeared as if the introduction of internal assessment as a solution for the ills of the traditional system was a remedy worse than the disease (Amrik Singh, 1971; Venkata Rami Reddy, 1977 a). Studies on the relation between internal assessment marks and University examination marks also reported very low correlations (Buch, et. al. 1961; Raina, 1963; Joshi and Srivastava, 1964; Kamat, 1968; Pratapa Mowli and Rajagopalan, 1970; Bennur, 1971; Palsane and Khadekar, 1977; Venkata Rami Reddy, 1977 b; Venkata Rami Reddy, 1977 a).

Investigations into the attitude of students towards internal assessment (IA) conducted by the author (Venkata Rami Reddy, b, c, d and e) produced some interesting results. In the investigation first cited, the attitude towards internal assessment of a stratified random sample of 240 students of a university college where at present the traditional system of examination is in vogue (but IA is going to be introduced shortly, about which the students also were aware) was measured. The investigation showed among other things that, there was a significant difference between the attitude of I and II year students. The mean score of the II year students was significantly less than that of the I year students. To ascertain whether the result was peculiar to that sample of students or whether there was a change in the attitude of the students towards IA due to some other factors, the I year students who participated in the study were followed up when they were in the II year (Venkata Rami Reddy, c). In this study it was found that there was a significant change in the attitudes of the students in the negative direction from the I year to the II year. The change was greater in the case of science students than in the case of arts students.

A similar investigation on a stratified random sample of 240 students of another university college where complete IA is being tried, since 5 years (Venkata Rami Reddy, d) yielded similar results as those obtained in Venkata Rami Reddy (b). A follow up study of the 120 I year students who participated in the study was also conducted when they were in the II year (Venkata Rami Reddy, e). In this investigation also it was found that there was a significant change in the negative direction in the attitude of the students towards IA as they progressed from the I year to the II year; and the change was greater in the case of science students than that in the case of arts students. These results are very much similar to those obtained in Venkata Rami Reddy (c), in the other university college where the examination system is of the traditional type*.

The change in the attitude of the students of the TU as they progressed from the I year to the II year reported in Venkata Rami Reddy (c) might have been due to the experience of the students with the university life, with regard to teacher pupil relationships etc., and their experience with the evaluation at the university examinations, of course of the traditional type, even where according to the students, there is (some) scope, especially in sciences where there are practicals orals etc., to excercise their bias and boost the marks of some and cut down the marks of some others (Venkata Rami Reddy, c). The possibility for this is less in humanities where the examination is only in theory papers, because in the set up of that university (TU) where this investigation was conducted the question papers for the theory examinations are set by a board of examiners who belong to other universities. The answer papers are confidentially renumbered before they are sent for valuation; making it difficult, if not impossible to identify the answer script of any individual. Further, the valuation is done by two examiners (one external, belonging to another university and another internal, belonging to that university) and the difference between the marks awarded by the two examiners should not exceed 15. If it does, it is sent to a third examiner for valuation and the mark given by him will be the ultimate mark awarded to the candidate.

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*For convenience we shall call the first university where the traditional type of examination is in vogue as the traditional university (TU) and the other university where IA is being tried as experimental university (EU).

The change in the attitude of the students of the EU, from the I year to the II year on the other hand, might have been due to their experience with the university life and their personal acquaintance with the new system of evaluation—internal assessment.

This raises an important question whether the magnitude of change in the attitude of the students of the EU in the negative direction which is based on their personal acquaintance with IA, is more or less than the change in the attitude of the students of the TU which is based upon their expectation of what is likely to happen if IA is introduced, by virtue of their experience with the traditional system of examinations. An answer to this question may be of significant value to the administrators implementing internal assessment. Hence, the present investigation aims at a comparative study of the change in the attitude of the students of the TU and EU as they progressed from the I year to the II year.

Hypothesis

There will not be any significant difference between the magnitude of change in the attitude of the students of the TU and EU.

Design and Sample

The design set up for the study was that of a pretest—post-test nature. At the outset a stratified random sample of 120 I year MA/MSc/MCom students equally distributed among the two sexes and the two faculties (arts and scienes) was selected from the TU; and a similar sample of the same size was selected by the same procedure from the EU. The attitude of the two groups of subjects (Ss) towards IA was measured. This pretest was given when the Ss were in the first quarter of the I year.

Both the groups of Ss belonged to the same area of the country. Both the groups had the traditional system of examination upto the BA/BSc/BCom level. Neither group appeared for any examination of any nature at the post-graduate level by the time the pretest was given.

The two groups of Ss were followed up when they were in the end of the II year; and their attitude towards IA was measured using the same instrument, under similar conditions, by the same investigator (the author) as in the pretest. 114 students of the TU and 106 students of the EU were available for the post-test. The ultimate sample for the post-test was distributed as follows:—

TU : arts faculty—27 men and 28 women; science faculty—30 men and 29 women

EU : arts faculty—27 men and 26 women; science faculty—27 men and 26 women

The investigation was aimed at comparing the change in the attitude of the students of the TU with that in the case of the students of the EU.

Instrument Used

An attitude scale developed by the author was used in the investigation. It is a Likert type attitude scale with 40 items, selected from a preliminary form containing 52 items, after administering it to 200 students and carrying out item analysis by Likert's (1932) procedure of criterion of internal consistency. Each of the items was arranged on a five point scale—strongly agree, agree......, strongly disagree. The scoring procedure was also in accordance with Likert who advocated assigning simple integral weights to the alternative responses instead of the complicated normal deviate system of weighting since the two procedures yield almost the same scores (Likert, 1932; Murphy and Likert, 1937; Edwards, 1969). Weights of 5, 4, 3, 2 and 1 were given to the five alternatives strongly agree, agree, ..., strongly disagree, respectively in the case of positive statements. The scoring procedure was reversed in the case of negative items. The score of individual on the instrument could vary between 40 and 200 with 120 as the neutral point. The split-half reliability of the instrument was 0.97 (N=100). Its content, construct and predictive validities have been established.

Results and Discussion

Table 1 shows the means and SDs of the pretest and post-test scores of the Ss from the TU and EU. It could be seen that there were slight differences between the mean pretest scores of the students of the TU and EU. *t* test was applied to find out whether the differences were significant. (The results of this test are not shown in the table). The *t* value for the difference between the mean scores of the whole group of Ss from the TU and EU was not significant at 0.05 level. This was true for the arts and science subgroups and also in the case of women students. But in the case of men students the *t* value was 2.66, significant at 0.01 level. These differences between the two groups on the pretest are of little concern for the study because the purpose is *not* to compare the post-test scores of the TU and EU, but to compare the difference between the pretest and post-test scores in the case of the TU and EU.

Matching the two groups on the basis of the pretest scores and assigning them randomly to the TU and EU was not attempted because of three reasons (i) it is not in the hands of the investigator to ask a particular group of students to join a particular institution and another group of students to join another institution. (ii) Mortality is a well known problem in the follow up study. This is especially so in a study where the post-test was to be conducted nearly two years after the pretest. This loss of Ss would invariably affect the matching that could have been obtained with some difficulty at the pretest stage. (iii) To compare the magnitude of the changes

Table 1

MEANS AND SDs OF THE PRETEST AND POST-TEST SCORES OF THE Ss FROM THE TU AND EU

Group	*TU*					*EU*			
	N		*Pretest*	*Post-test*	*t£*	*N*	*Pretest*	*Post-test*	*t£*
Whole group	114	M	128.71	124.31	3.09***	106	130.14	117.93	5.36***
		SD	14.37	16.66			16.04	20.03	
Men	57	M	125.56	120.67	2.21*	54	133.24	117.93	4.11***
		SD	14.63	15.85			15.77	23.04	
Women	57	M	131.86	127.95	2.16*	52	126.92	117.94	3.60***
		SD	13.38	16.66			15.67	15.79	
Science	59	M	129.17	123.00	3.67***	53	132.49	118.04	5.12***
		SD	12.56	15.17			16.04	15.68	
Arts	55	M	128.22	125.71	1.09@	53	127.79	117.83	2.81***
		SD	16.05	18.06			15.68	23.59	

Note:
- *** *t significant at 0.005 level*
- * *t significant at 0.05 level*
- @ *t not significant at 0.05 level*
- £ *The t test applied was that for correlated means (Garrett, 1973), the t values were compared with tabled values for one tailed test.*

in the attitude of the two groups, irrespective of the differences in their starting points would be easier and gives the same result as one would get had he started with matched groups and compared their post-test scores alone.

It could be seen from Table 1 that the mean score of the II year students was less than that of the I year students for the whole group as well as for all the sub-groups in either institution, showing that there was a change in the attitude of the students in the negative direction in the case of the students of the TU as well as those of the EU. *t* test (correlated means) was applied to find out whether the change in the attitude towards the negative from the pretest to the post-test was significant in the case of each of the sub-groups. It could be seen from the *t* values presented in Table 1

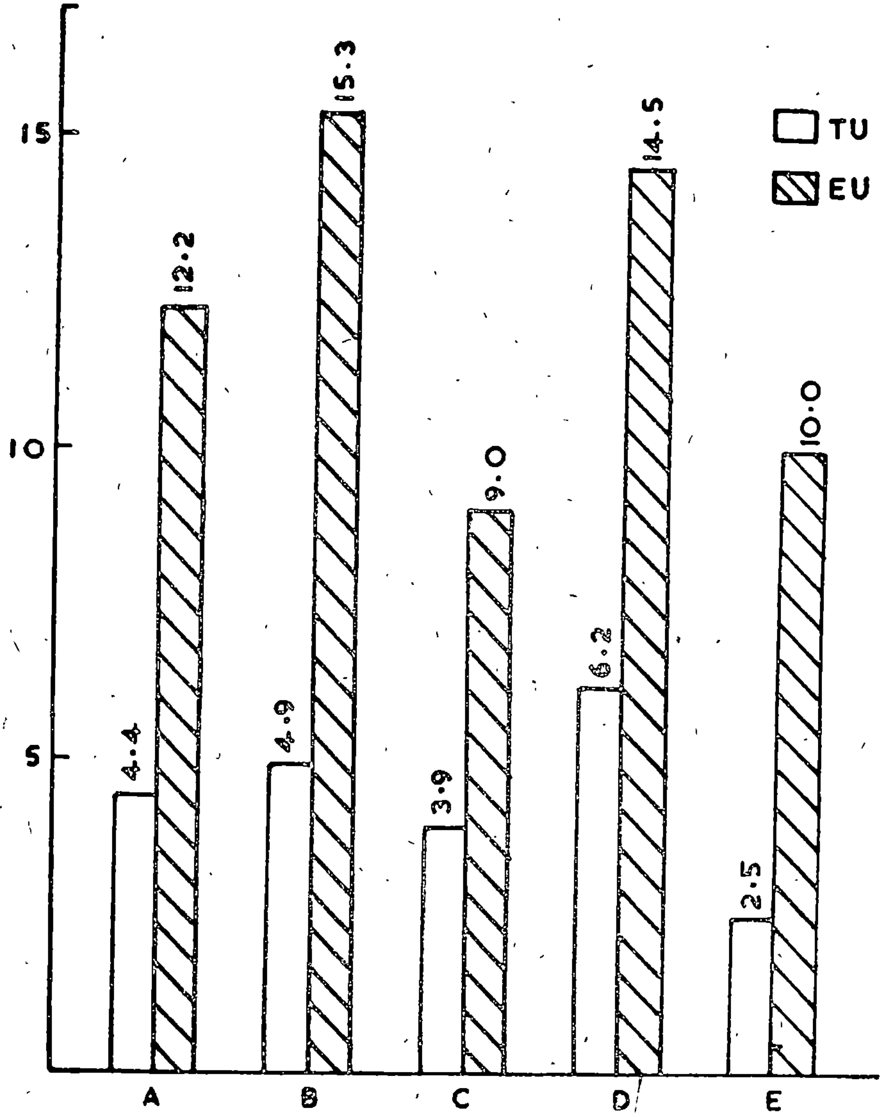

Figure showing the magnitude of change in the attitude in the negative direction from the pretest to the post-test for the different groups of Ss belonging to the TU and EU—(A: Whole group, B: Men, C: Women, D: Science, E: Arts).

that the change in the attitude in the negative direction was significant at or above 0.05 level in all the sub-groups in the case of the EU. In the case of the TU the change was significant in all the sub-groups except the arts group.

Table 2

MEANS AND SDs OF THE DIFFERENCE SCORES OF THE DIFFERENT SUB-GROUPS OF Ss FROM THE TU AND EU. (THE MEAN SCORE ON THE POST-TEST WAS ALWAYS LESS THAN THE MEAN SCORE ON THE PRETEST)

Group		*N*	*M*	*SD*	*t*
Whole group	TU	114	4.40	15.25	3.27**
	EU	106	12.21	20.03	
Men	TU	57	4.89	16.78	2.85**
	EU	54	15.31	21.59	
Women	TU	57	3.91	13.55	1.67@
	EU	52	8.98	17.97	
Science	TU	59	6.17	13.00	2.57*
	EU	53	14.45	20.55	
Arts	TU	55	2.51	17.17	2.14*
	EU	53	9.96	18.96	

Note: ** *t significant at 0.01 level*
* *t significant at 0.05 level*
@ *t not significant at 0.05 level*

Table 2 shows the means and SDs of the difference scores of the different sub-groups of Ss belonging to the TU and EU. It could be seen that the means of the difference scores of the different sub-groups of the TU were *less* than the difference scores of the corresponding sub-groups in the EU. *t* test was applied to find out whether the difference between the magnitude of the change in the attitude of the students of the TU and EU was significant. It could be seen from the *t* values presented in the last column of the table that the *t* values were significant for the whole group, for the arts and science sub-groups and also for the men group. The *t* value for the women group was, however, not significant at 0.05 level.

This shows that there was a greater change in the negative direction in the attitude (towards IA) of the students of the EU, who had personal acquaintance with the new system for nearly two years, compared to the change in the attitude of the students of the TU who had experience with traditional system of examination only.

Under normal circumstances, there should not have been any change in the attitude of the students in the negative direction, though a change in the positive direction would have been simply ideal. A slight change in the attitude of the students of the EU in the negative direction on par with that in the case of the students of the TU could be of little concern to the administrator or to the reformer of examinations, since such a result could have been interpretated saying that students do suspect the objectivity of the teachers even in the traditional system where the scope for excercising bias is very little and so is the case with students who are undergoing IA. On the other hand, a wide difference between the pretest and post-test scores in the case of the EU, far above that seen in the case of the TU indicates that all is not well with the new system of evaluation.

An examination of the responses of the students of the EU in the pretest and the post-test showed marked changes towards the worse as they proceeded from the I year to the II year. They felt that unworthy, subjective, non-academic considerations like caste, creed, region, religion, sex, servitude, etc. influenced the teacher in his evaluation (Venkata Rami Reddy, f). This was substantiated in informal interviews the author had with students and teachers of the EU and also in the responses of the teachers of the EU to some of the statements in the attitude scale (Venkata Rami Reddy, g). No wonder, therefore, that there was a considerable amount of change in the negative direction in the attitude of the students of the EU towards IA.

This may be due to inadequacy in the basic infrastructure, in the form of training the teachers in objective methods of evaluation, providing the students with adequate reference material and developing built in checks to prevent the subjectivity of the teachers influencing the evaluation, which is essential for the successful functioning of the system.

Conclusion

The magnitude of the change in the attitude of the students of the EU towards the negative was significantly higher than the magnitude of the change in the attitude of the students of the TU, showing that all is not too well with the implementation of the new system and that much is left to be desired.

The hypothesis that there will not be any significant difference between the magnitude of change in the attitude of the students of the TU and EU was rejected.

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College Youth, Their Courses of Study and Their View of Society

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College youth or students have attracted much research attention. The study conducted by Damle (1966) provides valuable information about the students in Poona city. These and similar studies have highlighted the critical role which social and economic goals of the students play in shaping their social outlook. While enquiring into the phenomenon of students' activism, many researchers (see for example, Cormack, 1961; Lipset, 1967; Altabach, 1968) have found uncertainty relating to the future as the motive force behind much of their restive behaviour. In this context, mention may be made of studies dwelling upon certain psychological dimensions. Mohanty (1967) has studied anxiety, hostility and the like amongst students. Mehta (1970) has looked into the social perceptions of the students. Indeed, anxiety and frustration and future expectations are not independent of each other. As such, several studies underline, and rightly so, the fact that the level of anxiety and frustration differs from person to person, or student to student (see for instance, Singh, 1968).

Notwithstanding the vast body of literature on college youth, they still remain complex—difficult to understand and difficult to predict. This calls for their study from many more standpoints. For example, there are courses of study of general nature like Humanities and Social Sciences. These non-professional courses may not lead to specific occupations, and they, therefore, may leave considerable room for occupational uncertainty. On the other hand, there are professional courses like Engineering and Medicine, leading, ordinarily, to specific occupational pursuits; and they, therefore, may leave little room for occupational uncertainty. The element of professionalism or job-orientation in various courses of study may also have some bearing upon the psycho-social make-up of the students. It is from this standpoint that a study of college youth along the lines of their course of study appears to be relevant and promising.

The present paper is a modest attempt to study the social and economic background of the college youth and their views of society. This may help in developing an understanding of the attitude of the students and their anxieties, frustrations and the like. Towards this the paper sets out to examine the hypothesis that demographic and family background of the college youth, their curricular and other activities, and their social view vary with the type of courses they are pursuing. Social view may be regarded as pro or anti-opinion in respect of society and its functioning. It may be assumed to consist of such entities, often overlapping, as social optimism, enthusiasm, confidence, reassurance and the like.

The paper focuses itself on those who are studying for a graduate or post-graduate degree. As mentioned earlier, there are professional as well as non-professional courses. Of course, it is not always easy to draw a line between them. However, on the basis of job-orientation, these courses of study have been rank-ordered with the help of fifteen judges. These are in descending order as follows: Medicine, Engineering, Agriculture, Science, Commerce, Home Science, and Arts (Humanities and Social Sciences).

Study Procedure

As part of a larger work, the present study has been conducted in Jabalpur town, Madhya Pradesh. There are twentyseven colleges offering different types of courses at the undergraduate and post-graduate levels. After forming strata, nine colleges have been randomly selected. From each college classes/sections (clusters) have been randomly picked up, so as to get the number of students which would be proportionate to the size of the stratum concerned. Ending up with 4,415 student-respondents (undergraduate: 84.1% and post-graduate: 15.9%), this multi-stage cluster sample should facilitate the realisation of the present objectives.

A questionnaire in two languages, English and Hindi, has been developed, pre-tested, and standardised. The printed questionnaire has been administered in a groupsetting, interrupting the normal instruction-schedule of the classes/colleges.

The data have been analysed at the Delhi University Computer Centre. For the present purposes, apart from cross-tabulation, proportions and averages, statistical tests of chi-square, contingency coefficient and rank-correlation have been utilised. It may be noted that owing to the relatively large size of the sample, probability values in most of the cases are significant at 10 per cent level or better (see Siegal, 1956). However, attention has been paid only when there has been found a significant association between the variables (see Snedecor and Cochran, 1967, Kendall and Stuart, 1961).

Findings

At the outset, we need to have an idea about the distribution of students in accordance with their courses of study (see Table 1). The last four courses given in the table may be regarded, in rank-order, as non-professional courses. Seemingly, the sample gives less representation to Arts courses. Nevertheless, Home Science and Commerce have a good deal of affinity with the Arts, Commerce, at least, as far as job-orientation is concerned. As such, this imbalance should not affect our conclusions.

Table 1

SHOWING COURSES OF STUDY OF THE RESPONDENTS

	Medicine	*Engineering*	*Agriculture*	*Science*	*Commerce*	*Home Science*	*Arts*	*Total*	*N.R.*
f	349	382	333	1,385	1,149	257	554	4,409	6
%	7.9	8.7	7.6	31.4	26.1	5.8	12.6	100	0.1

In order to test the present hypothesis we may now look into the demographic, family and scholastic aspects of the college students and their social view in relation to their courses of study.

Demographic Aspects: The linkage between demographic factors and social phenomena is often emphasised (see Ford and DeJong, 1970). We may look into some of those which may be relevant to college youth. It would be observed (see Table 2) that most of the demographic variables show significant differences with the study-variable, course of study. Some courses are almost exclusive to women, like Home Science, while others are more popular with men, like Commerce and Engineering. At the same time, Arts and Science courses are popular with both. Age also shows significant differences in this regard. The average age of the students is found to be 18.7 years. In non-professional courses students are younger than in professional courses. To illustrate, the average age of a Medicine student is 21.9 years as against, 18.4 years of a Science student. Science courses are popular with all the religious groups. Proportionately, there are more Jains studying Commerce, and, likewise, there are more Buddhists and Christians, in Medicine. There are also caste differences. For example, there are more members of scheduled tribes in Agriculture and Engineering; and in Medicine, we find more Vaishyas and Kshatriyas. Regional differences are also in evidence. Proportionately, in Medicine and Agriculture, there are many more students hailing from the South (code-categories formed on the basis of mother-tongue of the respondents), and in Engineering, more from East. Similarly, Medicine and Engineering have more urban students; whereas, Agriculture has more from rural areas.

Table 2

SHOWING STATISTICS OBTAINING BY CROSS-TABULATING THE COURSES OF STUDY OF THE RESPONDENTS WITH DEMOGRAPHIC VARIABLES

Variables	*Degrees of freedom* *df*	*Chi-square* X^2	*Contingency coefficient* *C*	*Probability* *P*
Sex	6	2372.63379	0.59153	0.0001
Age	18	928.46606	0.42306	0.0001
Religion	36	74.94904	0.12942	0.0001
Caste	36	115.66411	0.18968	0.0001
Region	18	81.46420	0.14249	0.0001
Rural/Urban	18	475.33643	0.31239	0.0001

Keeping in view the above analysis, it would be justifiable to infer that the courses of study pursued by the college youth show highly significant differences in terms of demographic variables.

Family Aspects: The role of the family in an individual's life can hardly be over-emphasised (see Folsom, 1949; Karve, 1953). It is, therefore, not unexpected to find that most of the variables relating to family show a good deal of association with the course of study of the students (see Table 3). The family's educational status, a coded composite category, is found to be relatively high in the case of Agriculture, Arts and Medicine students; it is medium in the case of Engineering students; and it is low in the case of Commerce students. Considering predominent family occupation, Medicine and Engineering students are more from the service-class, while Agriculture students are more from agricultural families. Family monthly income also shows significant variations (sample mean: Rs. 875). For example, the average family income of a Medicine student is Rs. 1,064 as against Rs. 764, for a Commerce student. This point has been pressed further, and per-capita family income has been analysed (sample mean: Rs. 151). The differences in accordance with the courses of study appear to be real—it is Rs. 186 for a Medicine student and Rs. 133 for a Commerce student. Towards securing a general estimate, a composite and rough Socio-Economic Status scale (SES) has been worked out by taking into account the variables of caste and

Table 3

SHOWING STATISTICS OBTAINED BY CROSS-TABULATING THE COURSE OF STUDY OF THE RESPONDENTS WITH THE FAMILY VARIABLES

Variables	*df*	X^2	*C*	*P*
Family educational status	12	197.48419	0.21469	0.0001
Family occupation	12	187.56583	0.20761	0.0001
Family monthly income	24	278.80054	0.24992	0.0001
Per capita family income	20	245.60051	0.23657	0.0001
SES	12	249.56253	0.23195	0.0001

family occupation and family education. Also in this respect, the differences are found to be significant. Medicine and Home Science students are relatively from high—SES families; whereas, Agriculture students are more from low—SES families.

It is, thus, not difficult to conclude that the family background of student is far from being homogeneous. There are highly significant differences in relation to their courses of study.

Scholastic Aspects: Concerned with college youth, it would be in order that the paper should delineate some of their scholastic aspects. A perusal of Table 4 would reveal that all the variables taken up for analysis show significant differences. Joining the National Cadet Corps, the National Social

Table 4

SHOWING STATISTICS OBTAINED BY CROSS-TABULATING THE COURSE OF STUDY OF THE RESPONDENTS WITH THE SCHOLASTIC ASPECTS

Variables	*df*	X^2	*C*	*P*
Extra-curricular activities:				
NCC/NSS	18	399.76367	0.30595	0.0001
Co-curricular activities	6	125.57410	0.16656	0.0001
Indoor games	6	150.07475	0.18183	0.0001
Leisure time activities	6	67.71811	0.12314	0.0001
Independent source of income	24	414.49365	0.50700	0.0001
Academic achievement	8	1198.94214	0.47227	0.0001

Service, or games/sports is compulsory at the undergraduate level. Even in this respect, the choice-pattern varies noticeably with the course of study. The NCC is more popular with Medicine, Agriculture, and Science students; the NSS, with the Home Science students (women?); and, games/sports, with Arts and Commerce students. The level of co-curricular activities (participation in seminar, symposium, debate and so forth) is relatively high among the Agriculture and Medicine students, and markedly low among the Arts and Commerce students. This pattern is almost repeated in respect of involvement with indoor games and leisure-time activities. Independent source of income in relation to students, also gives, among other things, an idea about their seriousness in regard of their studies. It is seen that around 27% of them have one independent source of income or another. Nevertheless, it is mostly the scholarship (including maintenance—stipend given to those from the weaker sections of society), except in the case of many Commerce students: quite a few of them are doing part-time jobs or business. Sharp differences are observed when we look into the academic achievements of the students. In Engineering and Medicine, there are more students with outstanding academic career. In contrast, Commerce and Arts classes are virtually packed with poor or, at best, Medicine students.

To recapitulate, scholastic aspects of the students are as interesting as they are found to differ from one course of study to another.

Parental Control: Certain family dimensions have already been outlined. We may now turn to those parameters which underscore relations between the students and their parents (see Table 5). That all the variables taken up for analysis show significant variations, would be noticed. The opinion of the students themselves in the choice of their course of study, has been, it is found, important in almost all the cases. Nevertheless, parents' opinion, relatively speaking, has been decisive in the case of Commerce as well as

Table 5

SHOWING STATISTICS OBTAINED BY CROSS-TABULATING THE COURSE OF STUDY OF THE RESPONDENTS WITH THE VARIABLES RELATING TO PARENTAL CONTROL

Variables	*df*	X^2	*C*	*P*
Decision on course of study	18	169.16075	0.19307	0.0001
Mothers reaction to late coming	12	117.00847	0.21029	0.0001
Father's reaction to late coming	12	115.26883	0.21071	0.0001
Restriction upon choosing friends	12	190.50038	0.20824	0.0001
Tension between R and parents	18	75.61411	0.14614	0.0001

Arts students. Coming late in the night is not unusual with the young people. Mothers and fathers of Arts, Commerce and Science students are found to be more restrictive in this regard; while, on the other hand, those of Engineering and Medicine, are more permissive (understanding?). Similarly, parents of Commerce, Science and Arts students are, the data show, more particular about the friends their offspring move with than those of professional courses. As a sequel to this, the frequency of tension—situations between the students and their parents has been examined. Interestingly, more professional students report 'often'; and, more Home Science students (women?) report 'never'.

Thus, the variables relating to parental control show a good deal of association with the course of study. Apparently, although the professional students have a relatively more permissive family atmosphere, they also have to put up with frequent tension-situations in relation to their parents.

Social View: The foregoing analyses relating to the demographic, family and scholastic aspects, and to parental control, bring out a profile of students in Jabalpur in some detail. With this kind of scenarie, we may now attempt to assess their social views.

Optimism: In order to ascertain optimism amongst the students, their response has been elicited on one item of the questionnaire: "Is society changing for the better, or for the worse? What is your opinion?" The responses have been coded as high, average, and low optimism. Table 6 presents relevant statistics—a glance over which would show that the differences in terms of course of study are significant. In the first place, it may be noted that most of the students are middle-roaders. Leaving this aside, the social outlook of Engineering, Commerce and Arts students is seen to be relatively more optimistic, as compared with that of the Medicine and Agriculture students which is more pessimistic. Not only this, the value of rank-correlation is

Table 6

SHOWING STATISTICS OBTAINED BY CROSS-TABULATING THE COURSE OF STUDY OF THE RESPONDENTS WITH THEIR SOCIAL OPINIONS

	df	X^2	*C*	*P*	*Tau*	*P*
Optimism	12	78.8493	0.13258	.0001	—0.09996	.0001
Enthusiasm	12	36.32469	0.08270	.0001	-0.03321	.0012
Confidence	12	33.37462	0.08666	.0001	0.00442	.3336
Self-assurance	12	79.31577	0.13307	.0001	0.06455	.0001

negative, suggesting an inverse relationship between the level of optimism and the degree of professionalism in the course of study. However, the value of the correlation is not much. Notwithstanding these marginal differences, the students of the professional as well as non-professional courses are somewhat indistinguishable in this regard.

Enthusiasm: The response of the students has been elicited on two questionnaire items: (1) "Would you say that you do not care whether society continues or gets destroyed tomorrow?" (2) "Do you care a lot about what happens to you or do you not care?" The responses have been grouped into a composite variable, and the statistics obtained by cross-tabulating it with the course of study are presented in Table 6. Differences in this regard are worth noticing. The Medicine and Agriculture students rate high (enthusiastic or spirited?); and, against this, the Commerce students rate low (nonchalant or apathetic?). The value of rank-correlation, though positive, is not very strong. It thus, follows that it would not be always easy to differentiate students of various courses of study on this count.

Confidence: Towards this, the views of the students have been ascertained on two questionnaire items: (1) "Do you feel that no matter what you do, you cannot change social conditions?" (2) "Do you think merit/qualifications have no place in the present set-up?" The responses have been grouped and the relevant statistics are shown in Table 6. The variations are statistically significant. It is observed that Engineering, Commerce, and Arts students have relatively more confidence. The lowest rung, strangely enough, is occupied by the Medicine students. However, the rank-correlation is insignificant. On the whole, confidence among the professional students is little different from that among non-professional ones.

Self-assurance: With a view to assessing the level of self-aassurnce amongst the students, their opinion has been sought on two questionnaire items: (1) "There are students who make plans concerning their marriage, future study, or occupation they would like to take up subsequently. Would you say that you have plans or that you have no plans?" (2) "Generally speaking do you face situations as they come or are you able to anticipate them and are able to plan your actions in advance?" These items, of course, have their focus more on individual than on social conditions. However, it is assumed for the present purposes that only those individuals who possess a modicum of self-assurance would take to planning their course of life. Responses have been grouped, and relevant statistics are provided in Table 6. The differences are greatly significant. Again, most of the students are in the middle, yet a few trends become evident if we go by the proportions. Medicine, Engineering and Science students appear to have a greater amount of self-assurance than Home Science, Agriculture and Arts students. Yet, rank-correlation does not bring out any clear trend. From this stems the difficulty in infering that the professional students score over non-professional students vis-a-vis self-assurance.

Conclusion

It would be recalled that the present paper has proceeded to examine the hypothesis that demographic and family background of the students and their social, economic, curricular and co-curricular activities as well as their social view vary with the type of courses they are undergoing. The analyses show that there are notable demographic differences. So is the case with the family background. Further, the professional students do not only have outstanding academic achievements to their credit but they are also more involved in co-curricular and extra-curricular activities. Interestingly, the parents of the professional students are more permissive or, perhaps, understanding than those of non-professional students. Nevertheless, the former also have to face more tension-situations between themselves and their parents.

Do these differences remain equally clear-cut in the matter of social view? In respect of optimism, professional students are better off than non-professional students—but in a very limited degree. On the other hand, in enthusiasm, confidence and self-assurance, professional and non-professional students are practically indistinguishable.

Evidently, the element of professionalism in the course of study has not been much able to influence the social outlook of the students. If they have, the differing levels of expectations may have, presumably, neutralised it. In any case, in respect of demographic and family aspects, professional students differ perceptibly from non-professional students; yet they appear to share much the same view of society. In view of this, the presence of certain sub-cultural values or youth values transcending socio-economic and even scholastic background cannot be ruled out.

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Problems and Perceptions of Social Science Teachers in Higher Education

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Social sciences have come to play a very significant role in modern times. In fact they first appeared very early in the history of all civilisations. Inspite of such a long history, their place in modern society is not as impressive as it ought to be. This scant respect to social sciences is not desirable. For it is the social sciences which lay ground work for an effective education making people's beliefs more rational and forcing valuations of a higher order in the society. It is, therefore, necessary that the scientific knowledge in the social sciences advance more rapidly.

In the advancement of social science knowledge, social scientist has a crucial role to play. His role has become increasingly important because of rapid scientific and technological advancement. For every scientific feat has its own inevitable social consequences. Unless efforts are made to co-ordinate the progress of knowledge in natural sciences and social sciences, 'future shocks' cannot be avoided.

In the natural sciences, inspite of human intervention, because of the nature of the object which is governed by certain laws their enquiry tends to be scientific which is not the case in social sciences. As a result the social science enquiry needs intellectual resources of higher order. It is a common observation that these subjects have not been able to attract the best as most of the students choose a subject on the basis of job potentiality.

Further, those social science researchers are engaged in examining the social phenomenon which is fraught with innumerable problems. Efforts are required on a large scale to better the conditions of social science teachers in general and researchers in particular, if we have to overcome the present situation.

Although certain amount of research has been done in social sciences, hardly any attention is bestowed on the problems of social scientist himself. It is this gap that this paper attempts to fill up in a modest way.

The Methodology

For the purpose of this study 80 respondents are drawn on the basis of random sampling. These 80 social science teachers, belonging to different disciplines, are working in the Kakatiya and Osmania University jurisdictions. They are interviewed with the help of a structured questionnaire.

To start with the background details of the social science teachers are presented.

The sample distribution:

Table 1

THE PARTICULARS OF THE DISCIPLINE OF THE RESPONDENTS

Discipline	*Number of Respondents*	*Percentage*
Economics	18	21.6
History	5	6.0
Political Science	15	18.0
Public Administration	12	14.4
Geography	2	2.4
Education	2	2.4
Law	3	3.6
Commerce	23	27.6
Total	80	100.00

The table indicates that 23 respondents belong to Commerce, 18 to Economics, 15 to Political Science and 12 to Public Administration. The sample also includes respondents from the discipline of History, Geography, Education and Law. Therefore, it can be assumed that the study reflects the problems of all the social science teachers.

Table 2

ALL PARTICULARS OF THE RESPONDENTS

Sl.No.	*Age in years*	*Number of Respondents*	*Percentage*
1.	20—35	46	58
2.	36—50	32	39
3.	51 & above	2	3
	Total	80	100

The table indicates that a significant majority are young and middle aged while those who are old are very few.

Table 3

SERVICE PARTICULARS OF THE RESPONDENTS

Sl.No.	*Service in years*	*Number of Respondents*	*Percentage*
1.	1—5	32	40.6
2.	6—10	19	24.0
3.	11—15	12	15.0
4.	16—20	10	12.0
5.	21—25	5	6.0
6.	26—30	2	2.4
	Total	80	100.00

Out of the total 80 respondents, a large number of social scientists joined the profession very recently as more than 40% have put in less than 5 years of service. And those who have put in more than 20 years of service are not quite significant.

Thus the sample indicates that social science teachers are young, put in less than 5 years of service and belong to all the branches of social sciences.

Problems and Perceptions

Here an attempt is made to examine the problems and perceptions of these teachers about the various issues related to their research and the role in society. They were asked different questions in order to elicit the information.

Table 4

THE REASONS TO TAKE UP THIS PROFESSION

Reason	*Number of Respondents*	*Percentage*
Interested in the subject	45	54.8
No other alternative	22	26.8
Better prospects	13	18.4
Total	80	100.00

To start with they were asked the question about the reasons for their joining in this profession. Out of 80 respondents, more than 55% said that they were interested in this profession while 26.8% admitted that they had chosen it as there was no other alternative. About 18% said that they had no special love for it but they joined it because it offered better prospects.

Table 5

WILLINGNESS TO QUIT THE JOB

Response	*Number of Respondents*	*Percentage*
Yes	22	27.0
No	56	70.5
No answer	2	2.5
Total	80	100.00

To a question about their willingness to quit the job, about 70% were not willing to quit the job while 30% desired to change their profession.

Table 6

ALTERNATIVE PREFERENCE

	Engg.	*Medicine*	*Bio. Sc.*	*Phys.*	*Engl.*	*Eco.*	*P.S.*	*Executive*
Economics		2		1	1		3	1
Political Science					1			
Public Administration						1	1	
History	1							
Geography				1				
Commerce	3	4	2					
Education								
Law		2						
Total	4	8	2	2	2	1	4	1

Those respondents who were willing to quit indicated their alternative preferences. From 18 respondents of Economics, 8 were willing to change their subjects and profession. From these 8, two preferred Medicine, one Physics, one English literature, 3 Political Science and one Executive line. From 15 Political Science respondents only one wanted the change of subject from Political Science to English. From 12 Public Administration respondents only 2 wanted to change the subject from Public Administration to Economics and Political Science. From 5 History respondents only one wanted a change from his profession to Engineering. Similarly from two Geography respondents one wanted a change over to Physics. From 23 Commerce respondents 9 wanted a change. Out of these 9, 3 preferred Engineering, 4 Medicine and 2 Biological Sciences. From the 2 respondents of Education none was willing for a change in the profession. From 3 Law respondents 2 wanted a change over to Medicine. Thus

Engineering and Medicine appear to be attractive alternative professions. From among the Social Sciences, Political Science secured more preferences as an alternative compared to the other Social sciences.

Table 7

PREFERENCES IN ORDER OF IMPORTANCE

	1st	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*
1. Medicine	22	15	18	9	6	1	1
2. Engineering	16	26	8	10	9	2	1
3. Agricultural Science	15	12	15	14	7	4	3
4. Social Sciences	11	4	6	11	11	19	10
5. Natural Sciences	5	7	18	12	16	7	6
6. Veterinary Science	1	3	3	12	15	15	19
7. Arts	1	6	5	3	6	22	28

Equal preference for all —5
No answer —2

The respondents were asked to place different faculties in order of importance. For the purpose of these analysis, if first preferences are taken into consideration, out of 7 faculties viz. Medicine, Natural Sciences, Agricultural Science, Veterinary Science, Social Sciences and Arts, the Social Sciences secured 4th place in order of importance. If the first three preferences are taken into consideration, Social Sciences secured 5th place in order of importance. If the last two preferences are taken into account, Social Sciences secured 3rd place in order of declining importance from below. Thus Social Scientists, by and large, were not prepared to place the Social Sciences above Medicine, Engineering, and Agricultural Sciences. However, they placed it above Natural Sciences, Veterinary Science and Arts.

Table 8

IMPORTANCE OF SOCIAL SCIENCES

	1st	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*	*8th*	*9th*	*10th*
Eco.	35	12	8	6	7	—	2	1	1	—
His.	6	2	8	5	8	9	12	5	11	4
P.S.	5	12	10	11	9	10	5	7	3	—
P.A.	2	8	13	7	10	7	8	9	6	—
Soci.	3	7	11	13	5	5	7	6	8	1
Geo.	1	5	3	5	5	10	14	11	11	5
Psy.	3	2	7	7	14	10	8	10	8	10
Edn.	6	8	6	8	6	12	5	12	3	4
Law	5	4	5	7	5	4	9	9	19	2
Com.	6	9	—	—	2	—	—	—	3	4

Table 9
PREFERENCES IN ORDER OF IMPORTANCE

	Eco.	*His.*	*PS.*	*PA.*	*Soci.*	*Geo.*	*Psy.*	*Edn.*	*Law*	*Com.*	*Remarks*
Pol. Sc.	4	1	4	1	—	—	1	1	1	—	13–4
Pub. Adm.	6	—	—	1	1	—	—	—	—	—	8–1
History	1	3	—	—	—	—	—	1	—	—	5–3
Geography	2	—	—	—	—	—	—	—	—	—	2-Nil
Commerce	9	2	—	—	—	—	—	2	3	6	22–6
Education	1	—	—	—	—	—	1	—	—	—	2-Nil
Law	—	—	—	—	—	1	—	1	1	—	3–1
Economics	11	—	—	—	2	—	—	—	1	—	14–11

Tables 8 and 9 discuss about importance of various Social Sciences as perceived by the Social Scientists. An analysis of the 1st, 2nd and 3rd preferences together reveals that Economics secured first place followed by Political Science, Public Administration, Sociology and Education. Other Social Sciences namely History, Commerce, Law, Psychology and Geography are placed in that order on the lower rungs of the Social Science ladder.

Further analysis about the importance of their respective subjects, the study reveals that 77% of the teachers of Economics and 60% of the teachers of History gave first preference to their subjects. With regard to the other subjects, 33% of Law teachers, 30% of Political Science teachers, 28% of Commerce teachers and 13% of Public Administration teachers gave first preference to their respective subjects. From the subjects of Geography and Education, none rated his subject first in order of importance.

The foregoing analysis reveals that most of the Social Science teachers did not consider Social Sciences as important. This is evident from the fact that Social Sciences secured fifth place in order of importance. From the Social Sciences, Economics secured first place in order of importance followed by Political Science and Public Administration. Further, except the teachers of Economics, most of the Social Science teachers did not give first place to their respective subjects.

With regard to the role of Social Scientists, about 15 per cent felt that they were playing a vital role in the process of Social transformation. A very large number of the respondents lamented that the role played by the Social Scientist was highly unsatisfactory. A few thought that the Social Scientists were indifferent to Social problems and were cut off from the main social fabric. A few respondents complained that the services of the Social Scientists were not properly utilised.

About the role they conceived for Social Scientists, an overwhelming majority thought that the Social Scientist was an initiator of Social Change.

He was also expected to analyse the Social Problems and suggest the remedies. A few others thought that the Social Scientist should undertake bold and independent analysis of the Social phenomenon.

To the question as to why the Social Scientists were not able to play the role expected of them, the respondents came out with innumerable causes. These causes could be broadly classified into environmental and institutional defects and deficiences in individual Social Scientist.

Those who blamed the environment and the institutions gave the reasons such as inadequate economic, political and bureaucratic support, institutional barriers, defective recruitment system, social evils, defective educational system, improper leadership, absence of academic freedom and heavy work-load.

Those who found the defects with the individual Social Scientist pointed out that the Social Scientist suffered from apathy, ego-centricism, cowardice, inferiority complex, slavish mentality, conservative outlook, lack of calibre, absence of commitment and inadequate contact with the real issues of the society. There are a few who held that imperfect tools and absence of realistic and inter-disciplinary approach were responsible for the present state of Social Sciences.

About suggestions for making the social scientists more effective, the respondents came out with a wide variety of solutions. They include institutional, environmental, individual and methodological suggestions.

The institutional suggestions include, starting of an institute for Social Sciences, some agency to channelise their energies, better rapport between the Government and research, more opportunities to participate in administration, Government taking their advice seriously, formation of strong unions of Social Scientists, greater academic freedom, making research compulsory and more financial resources.

As regard to the environmental improvements the suggestions are: system of education should be changed to encourage original thinking, increase in the literacy rate in the society, academic freedom without any constraints, merit should be recognised and creation of congenial atmosphere for research.

Improvements at the level of individual Social Scientist are; they should be more bold, publish papers in local journals, interact with other walks of life, should stay in villages especially in tribal areas for some time, stop thinking about personal problems, better equip themselves, acquire greater self-confidence and greater interaction with the society.

The methodological improvements suggested are; encouragement of interdisciplinary approach, improvements in the analytical tools, undertaking more relevant research, building more realistic models, arranging proper training programmes, better equipping the Social Scientist, giving up the pure theoretical approach, evolving concensus about the basic issues and chalking out clear cut goals to research.

Conclusion

The vital role played by the Social Sciences in the modern world cannot be overemphasised. To make Social Science knowledge more meaningful and effective, the Social Scientist has a critical role to play. But strangely in Social Science research the most neglected area is the Social Scientist himself. This study attempts to cover this area.

The sample for the present study is drawn from all the Social Science disciplines, predominantly from younger age group who have put in less than 5 years of service. It is hoped, therefore, that the analysis reflects the existing situation in a larger perspective.

For an analysis of attitudes, the Social Science teachers were asked different questions pertaining to their preference to Social Sciences. The study reveals that 55% were interested in the profession and 70% were not willing to quit the job. Those who were willing to quit the job had shown preference for engineering, medicine and executive line. Thus the preference for the profession is not disappointing.

In order to analyse their perceptions, they were asked to rate different faculties and Social Science disciplines in order of importance. In this regard Social Sciences were placed fifth in order of importance and barring the teachers of Economics and History most of the other teachers of Social Sciences did not place their respective subjects in a respectable place. From among the Social Sciences, Economics is rated very high followed by Political Science and Public Administration.

About the role perception, a large number of respondents thought that the role of Social Scientist was to bring about the social change. But a large number of them confessed that the role played by the Social Scientist had been unsatisfactory owing to a number of environmental, institutional and individual limitations. They felt that the general social, economic and political conditions were not conducive for an effective role for Social Scientist nor the Social Scientist had the necessary competence and culture to play his role.

The respondents suggested a wide variety of solutions which include institutional, environmental, individual, and methodological reforms. This indicates the complexity and magnitude of problems of Social Science teachers.

The young Social Science teachers in the initial stages of their career are neither satisfied with the present role of Social Scientist nor perceived the place of Social Sciences as quite significant in the galaxy of various branches of knowledge. They have several problems which call for multi-dimentional solutions. Without certain prompt measures, the study indicates, the Social Sciences in general and Social Science research in particular would remain underdeveloped and ineffective.

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Modernisation of our Courses and syllabi in the Humanities and the Social Sciences

A. M. GHOSE,

As far back as 1961 the University Grants Commission appointed a Committee with Professor N.K. Siddhanta as the Chairman to "undertake a systematic and objective investigation of problems relating to the standards of higher education in Indian universities". The Report of this Committee, subsequently headed by Shri S. Govindarajulu, then Vice-Chancellor of Shri Venkateswara University and later by Professor A.K. Das Gupta, then Professor of International Economics at the Indian School of International Studies, was published in 1965. At one place the Report says, "unless the courses are geared to the dynamic changes taking place in different areas of knowledge, our students are likely to lag behind those of other countries where constant efforts are made in this direction. In fact, it has already been brought to our attention that in certain subjects Indian students are unable to cope with the teaching provided by some universities in USA, Canada and UK" (*Report on Standards of University Education,* UGC, 1965, p. 25). At last in February 1974 the UGC set up panels; in all there are today ten of them: Economics, Education, English Language and Literature, History, Law, Philosophy, Political Science, Psychology, Sociology and Social Work.

The need of modernising the courses had thus been felt long ago although the rationale for initiating the changes as enunciated by the Siddhanta Committee do not, however, appear to be very convincing today. In the first place, we need to modernise the courses not because "our students would lag behind those of other countries", but because the very purpose of education will not be served unless the courses are made relevant to our needs and aspirations. Education, it needs to be stressed here, is an instrument of social change and a system of education, not responsive to the challenges thrown by the society, would really be of no avail. Secondly, the inability of our students "to cope with the teaching" provided elsewhere would not be a besetting sin if they could only identify, analyse and solve their own problems which, for all that we know about them, are different in nature as well as magnitude from those found in other parts of the world. The 'disciplines' taught in the universities of USA, Canada or UK, we believe, are tailored to suit their respective needs.

Education should be rooted in the environment; it seeks to change the environment and, in turn, is sensitive to the changes that take place around us. Education, to be sure, is not the only instrument of social change. It would indeed be an amazing achievement if a handful of teachers and students could bring about a change in the desired direction by convincing the majority of the people that their goals are identical. That, to my mind, is unlikely to happen in the foreseeable future. All that the academics should sincerely aspire to achieve is to demonstrate to the society that they are, in a significant sense, leaders in a great adventure. If, that is, the people, are convinced that what the teachers and students are engaged in is ultimately going to promise them a bright future, materially and otherwise, then the existing apathy will have been adequately countered; the educational institutions will have received the support they need and deserve. An imbalance takes place if the system of education is unresponsive to the needs and aspirations of the society at large or when the large majority in the society finds the prevailing system to be expensive as well as unavailing. Modernisation, in brief, is genuine when it succeeds in bringing the system of education closer, in as many ways as possible, to the society and the people for whom it is meant. It is spurious when it is modelled to suit the needs of a small segment or of the people living elsewhere. Modernisation does not consist in incorporating what is in current (fashion) in the seats of learning in Europe or America.

Recommendations

Since 1974 when all the subject panels of the UGC recommended modernisation of the syllabi in their respective disciplines, the UGC planned workshops in about forty of them. The Reports prepared by the Conveners of the subject panels are being published. These Reports, unfortunately, do not follow a single format; it would have been better had the panelists been provided with a single set of question; the Reports then would have acquired greater cohesion. In what follows I shall discuss briefly the major findings of some of the panels.

The Report of Psychology contains the details of discussions the panelists had on the Academic and Professional objectives, Teaching Methods and Materials, Organizational Problems, NSS in Psychology and so on. The Report on Political Science, on the other hand, claims to embody the national consensus. But the emphasis is clearly on research and the teaching of methodology. One gets the impression that the panelists have been inordinately influenced by fashions prevailing in some of the American universities with their emphasis on 'empirical studies'. What perhaps deserves to be discussed is the meaning of 'politics' in the context of our country and its contemporary 'political' aspirations. The fact remains that 'politics' is a recent entrant into our repertory of ideas; it has yet to enliven our entire national life. What is expected of our academics is to demonstrate that the 'political' is an inalienable dimension of the collective life for its wholesome growth and development. The sociologists, however, are divided in their view regarding the advisibility of including sociology at the B.A. level because some of them thought that the discipline was amorphous in nature while others said that the amorphousness need not be exaggerated. There was a general agreement about the "cognitive contents of the courses" being "grounded into the Indian reality and its history". The sociologists alone, among others, discussed "Teaching Sociology through Hindi Medium". The Law panel discussed 'Socially Relevant Legal Education' and they also took into account the problems pertaining to the preparation of textbooks, an extremely relevant issue. The Philosophy panel considered "the problem of modernisation of teaching and research in philosophy as a part of a larger problem of education as a whole, and the still larger problem of encounter between the Indian civilisation and the Western civilisation in all aspects of life". The concluding paragraph of the preface rightly observes, "...the efforts and resources that have gone into this Report would not have been in vain if it carried forward the discussion of the problems with which it is concerned".

The History panel held four zonal workshops. On the recommendations of this panel the Commission initiated several important programmes.

(1) In May 1975 the Commission considered the suggestions of the panel of the development of museums and the acquisition of the audio-visual aids pertaining to the teaching of History. The aids included transpracies, plaster carts, epidiascopes etc. This is no doubt a commendable step; 21 universities were selected. During the Fifth Plan a grant upto Rs. 20,000 had been sanctioned to the universities with working museums.

(2) Universities with strong departments of Science, History and Philosophy had been encouraged to initiate courses in the History of Science. Three universities, Rajasthan, Roorkee and the Birla Institute of Science and Technology, Pilani, were sanctioned posts, 10 junior research fellowships, administered centrally, by the UGC were instituted for carrying on research in History and Philosophy of Science.

(3) The History Panel suggested the setting up of a Museum of man. The suggestion, it is gathered, is receiving active consideration from the Department of Culture.

(4) The History Panel also recommended that a few universities may be encouraged to establish archival cells. About six universities were to be selected in the first instance and grants were to be provided to each of them for staff, library equipments and chemicals.

(5) The UGC appointed, on the recommendation of the panel, a committee to consider measures for the promotion of study and research in the field of 'Tradition and Social History of Indian Arts'. The Committee prepared a guideline for formulating appropriate courses.

Scope for Pursuit

There are, however, certain areas which remain neglected: in what follows are briefly referred to here.

An important field where historians could do extremely useful work is the History of Ideas.

Ideas, or paradigms, as Thomas S. Kuhn, the author of The Structure of Scientific Revolutions would say, emerge in almost all well-defined branches of knowledge. Some of those ideas rule over the thoughts of a people for centuries while others are relatively short-lived; some of them are ancient while others may be of recent origin. A number of confusions surface when we review the history of these ideas in so far as our country is concerned. We should not forget that many of these ideas are only apparently ancient on account of successful 'Sanskritization' by recent writers. Again, there are ancient ideas whose sense as well as reference have been lost either on account of disuse or on account of incrustations of alien world-views of subsequent generations. Some ideas are worshipped because of their antiquity while others adore ideas because they are 'new' and 'fresh'. Ideas respected and worshipped normally belong to the realm of religion and philosophy while those which are adored for their freshness belong mostly to the realm of Science and Technology. The field of the history of ideas offers challenges to all those who are interested in multi-disciplinary researches. At least four disciplines acquire great relevance. There is the discipline to which the idea belongs (i.e. 'democracy' to political thought or 'caste' to sociology); secondly, there is the language in which the idea is articulated ('caste' in English or 'varna' and 'jati' in Sanskrit) philosophy and, finally, history. In a sense, comparative studies of civilizations, could very well be said to be comparative studies in the history of certain 'ruling' ideas.

Secondly, the study of local history needs encouragement. There are any number of stupas, viharas, caves, temples, mosques, churches, forts and monuments which need to be retrieved from legends and hearsay. Reliable and readable monographs on many of them are conspicuously absent.

Lastly, about the future of historiography, I shall hazard a guess. A conscious effort to unearth the historiographical predilections of historians is a recent phenomenon, at least, in our academic circles. Once, however, such efforts are made, practising historians become acutely self-conscious and tend to get embroiled with one another.

There is nothing wrong in these controversies so long as they are carried on, within the framework of the acknowledged rules of scholarly debate.

As more and more scholars come from what are even today called 'scheduled' castes and tribes, the 'facts' of history, naively pronounced as incontrovertible, will tend to thaw; they are destined to be reinterpreted just as nascent historians of modern India, Hindus and Muslims, have found it 'necessary' to interpret afresh the events of the British Raj. The movement initiated by Ambedkar has not yet drawn the attention of the historians it deserves. Eminent social anthropologists in this country have referred to what they have called the processes of 'Sanskritization' and 'Brahmanization'; elsewhere too sociologists have found out what is known as 'embourgeoisement'. At a certain stage of development perhaps a process which could be called 'de-Sanskritization', may take place. Those who were denied a place in the past are likely to renege. The sooner, therefore, the upper-caste-Hindu-view of history is modified, the better it is.

Many young scholars, neophytes in the game called research, with projects in the 'Social Sciences' are known to have lost their way in the haze created by symbols borrowed hastily from Statistics and Mathematics; their exercises have often produced jargonized trivia. In Philosophy comparative studies have resulted in the compilation of parallel passages, philosophically sterile but impressive otherwise. It is time our philosophers asked themselves if any profound discussion in the tradition of Indian Philosophy is at all possible when we have persuaded ourselves to accept Western or westernised ideals, institutions and models in so far as Economics, Politics, Science and Technology are concerned. It is heartening to find the panelists in Philosophy raising the question: what are the needs of the present day? Their hesitation to answer the question confidently and succintly is equally disconcerting.

Conclusion

What these panels have achieved is really commendable, nevertheless. Our universities have several problems to face and some of them are really intractable. But one of these problems is the great need of modernisation of the courses and the panelists have admirably addressed themselves to that task. Indeed there has been a silent revolution; for the first time we find our academics facing this problem. But the impact of this revolution is yet to be assessed. The UGC subject panels have only submitted suggestions; the task of accepting or implementing them depends on the various Board of Studies in the universities. The 1965 Report observed, "In most universities decisions of the Boards of Studies are not final till they are approved by other bodies like the Faculty, the Academic Council and the Syndicate". Often these protracted procedures turn out to be exasperating.

A rigid uniformity, I am sure, would not be approved by anybody and the UGC would surely not be flattered to see the universities vying with each other in accepting the recommendations of the subject panels, lock, stock and barrel. But it would indeed be a pity if some of the Boards refuse to accept those suggestions in the name of 'academic autonomy'. In the course of the next plan period the UGC may be tempted to invite universities to submit their responses; it would, therefore, be proper if the universities are a little more articulate in formulating alternative suggestions if any, keeping in view the resources available. Perhaps the universities of a region or a State could organise seminars and explore possibilities of preparing suitable textbooks in the language of the State and institute visiting professorships/lectureships. Lately there has been a good deal of discussion on inter-disciplinary and multidisciplinary approaches to our problems. Perhaps the universities of a particular region could pool their resources to implement programmes which need experts from more than a single discipline. It is now widely acknowledged that an inter-disciplinary approach often helps in broadening as well asdeeping our vision. There may be by many other organisational or administrative obstacles; the ones that are not insuperable could surely be tackled.

One final point. Modernisation of the teaching of a discipline is one thing and modernisation of the discipline itself is another thing. Modernisation of a discipline depends on the efforts of small minority of creative thinkers, investigators or scholars while modernisation of teaching is largely a matter pertaining to the methods and techniques of communication and evaluation. Modernisation in the fundamental sense must refer to the modernisation of a discipline and I really do not know how far it can be 'planned' and 'successfully implemented'. Modernisation of the courses, we believe, will at least partially help us in breaking new ground. Our universities would be rendering an extremely useful service to the community if they begin to make courses increasingly relevant which is what modernisation, in the final analysis, means.

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Notes from Research

A STUDY OF TIME UTILIZATION BY RURAL SCHOOL AND COLLEGE STUDENTS DURING SUMMER VACATION

Of late, considerable emphasis has been laid on the measures to mobilise the energy of rural youth, in programmes of agricultural production and rural development. This is, indeed, very necessary since rural youth of India constitute a significant component of her population. Naturally, we cannot afford to ignore the contribution of this important segment of our population in the national development effort. In the Punjab as elsewhere in the country, a number of programmes have been developed to achieve this purpose. Utilisation of summer vacation time provides one such possibility.

The schools and colleges are closed during the summer months and students are freed from the rigours of formal class work. Many educationists question the desirability of such discontinuities in the educational process. There are, however, stronger and perhaps more persuasive views about the usefulness of the summer break. Students are presumed to re-establish contacts with their families and those coming from rural areas get an opportunity to help their parents on the farms. Recognising this need, the timing and duration of the summer break are so adjusted as to correlate with the peak seasons of farm activity. One may thus consider summer vacation as a continuation of the educational process but of non-formal type.

A question, however, arises as to how, in reality, the summer vacation time is utilized by students, particularly, those belonging to the rural areas. The students can use this period more productively by helping their parents on the farm, or by engaging themselves in constructive village development activities. There may also be other demands on their vacation time such as revising their studies, meeting friends and relatives, going on educational and/or recreational tours or just passing away the time without any particular purpose. The way in which students prefer and actually spend their time during the summer vacation periods, can become an important determinent of their future course of life. A student, who actively involves himself in farm affairs, can be expected to seriously consider farming as an occupation and the early experiences can prepare him for becoming a successful farm entrepreneur. Similarly, a future leader may tend to spend his time in social and development work. The time spent on socially undesirable activities may, on the other hand, lead to disastrous consequences.

A number of studies have been made about the interests, leisure time activities and preferences of rural and urban youth including those attending educational institutions. These are Bhatt (1958); Gupta (1960); Mathur (1960); Rao (1964); Singh and Haque (1966); Sálvi and Rade (1967); Desai (1967); Singh (1972); Singh (1973) etc.

The present study was undertaken to throw some light on how summer vacation time is actually utilized by students coming from rural areas. The specific objectives were:

1. to find out the extent of summer vacation time spent in the village or outside;
2. to study the preferences of rural school and college students for different activities; and
3. to determine the relative time actually devoted to preferred activities.

The Methodology

The study was conducted in Ludhiana district of Punjab. The respondents were rural students belonging to farming families. Two colleges and two schools (one in each case situated in a rural setting and the other in an urban setting) were selected for drawing the study sample. Following criteria were kept in view while selecting the institutions.

1. Availability of rural students belonging to farming families.
2. Within easy access to facilitate data collection.
3. Possibility of a sufficiently strong urban influence in case of urban institutions.

The rural urban distinction was considered necessary in the selection of institutions to bring out the possible variations that might exist in the preferences and utilization of vacation time by students.

Fifty per cent sample was drawn from the eligible students of 9th and 10th classes in the case of schools and from pre-final and final year classes in the case of colleges. It was felt that because of younger age, the school students upto middle classes may not be able to do all types of farm related work and may also not have crystallized their preferences. In order to avoid the transitory impact of the school period, students of 1st and 2nd year classes of colleges were not included in the sample. Accordingly, four categories of students formed the sample:

1. Rural boys attending rural school (RRS)
2. Rural boys attending urban school (RUS)
3. Rural boys attending rural college (RRC)
4. Rural boys attending urban college (RUC)

The data for the study were collected with the help of a questionnaire and analysed by recording the number of summer vacation holidays spent by students in different manners, scoring their preferences for various activities and determining the actual time devoted to each activity. Criteria were also developed to score the extent of preference and utilization of time for various activities. The activities were grouped into such categories as; (a) educational and recreational, (b) farm operations, (c) commercial aspects of farming, and (d) social and welfare work.

Mean preference scores and frequency distributions of students utilizing different percentages of time were calculated. The preferences for various activities were further analysed according to size of farm holding.

Findings and Discussion

(i) *Extent of summer vacation spent in or outside the village:* The data regarding average number of days spent by students of various categories in and outside the village are presented in Table 1.

Table 1

AVERAGE NUMBER OF DAYS SPENT PER STUDENT IN AND OUTSIDE THE VILLAGE

Category	*Available vacation days*	*Average number of days spent per student*			
		In village	*Percentage*	*Outside village*	*Percentage*
Rural boys attending rural school	35	30	86	5	14
Rural boys attending rural college	54	43	80	11	20
Rural boys attending urban school	34	31	88	3	12
Rural boys attending urban college	59	47	80	12	20

A perusal of the data indicates that the boys of all the categories viz. RRS, RRC, RUS and RUC spent more than three fourths of their vacation by remaining in the village. This, of course, is a healthy trend and indicates ample possibilities of harnessing the energies of rural youth for productive purposes by encouraging them to work for the betterment of their farms and villages.

(ii) *Preferences of students for various activities:* The data on preferences for various categories of students for particular activities were calculated in terms of mean preference scores and are presented in Table 2. As is clear from the figures, educational and recreational activities received the highest rank from all categories of students and activities relating to farming business were preferred the least. The extent of agreement on these preferences was determined on the basis on Kendall's Coefficient of Concordance. The value of the coefficient was found to be 0.675 which indicated considerable agreement on preferences for various activities. The value was statistically significant at 5% level.

The preferences for various activities were further analysed in terms of their association with the size of family farm holding. The data on chi square values are presented in Table 3. Students from families with large farm holdings expressed a high preference for farm operations, commercial aspects of farming and social and welfare work. All the differences except for educational and recreational activities were significant at 1% level.

Table 2

MEAN PREFERENCE SCORES OF STUDENTS FOR VARIOUS ACTIVITIES

Category of students	*Mean preference scores for various activities*			
	Educational and recreational activities	*Farm operations*	*Commercial aspects of farming*	*Social and welfare work*
Rural boys attending rural school	3.51(1)	3.03(4)	3.19(2)	3.17(3)
Rural boys attending rural college	4.24(1)	2.99(3)	2.73(4)	3.63(2)
Rural boys attending urban school	3.64(2)	3.62(4)	3.63(3)	4.34(1)
Rural boys attending urban college	4.05(1)	2.99(3)	2.70(4)	3.51(2)

Figures in brackets indicate ranks
$W = 0.675$; $Z = 0.9146$ (Significant at 5% level)

Table 3

Ψ^2 VALUES OF ASSOCIATION BETWEEN SIZE OF FARM HOLDING AND PREFERENCES FOR VARIOUS ACTIVITIES

Activity	*Ψ^2 value*	*Remarks*
Educational and recreational activities	4.19^{NS}	—
Farm operations	43.60*	Students in large holding category had high preference
Commercial aspects of farming	50.66*	Students in large holding category had high preference
Social and welfare work	16.74*	Students in large holding category had high preference

NS Non-significant
* *Significant at 1% level*

(iii) *Utilization of time by students on various activities:* The relative time devoted by the students to various activities during their stay in the villages was worked out in terms of average number of hours and the data are presented in Table 4.

Table 4

RELATIVE TIME DEVOTED BY STUDENTS TO VARIOUS ACTIVITIES DURING THEIR STAY IN THE VILLAGE

Category of students	*Average No. of days spent in village*	*Average number of hours per student*							
		Educational and recreational activities		*Farm operations*		*Commercial aspects of farming*		*Social and welfare work*	
		Total	*Per day*	*Total*	*Per day*	*Total*	*Per day*	*Total*	*Per day*
RRS	30	145	4.83	212	7.06	40	1.25	9	0.30
RRC	43	190	4.41	170	3.95	45	1.04	12	0.27
RUS	31	185	5.96	103	3.32	22	0.71	4	0.13
RUC	47	295	6.27	186	3.95	42	0.89	2	0.04

On the basis of the average number of hours per student per day (given in brackets), various categories of students have been placed in descending order in respect of each of the activities as follows:

1. *Educational and recreational activities*

a) Rural boys attending urban college	(6.27)
b) Rural boys attending urban school	(5.96)
c) Rural boys attending rural school	(4.83)
d) Rural boys attending rural college	(4.41)

2. *Farm operations*	
a) Rural boys attending rural school	(7.06)
b) Rural boys attending rural college	(3.95)
c) Rural boys attending urban college	(3.95)
d) Rural boys attending urban school	(3.32)
3. *Commercial aspects of farming*	
a) Rural boys attending rural school	(1.25)
b) Rural boys attending rural college	(1.04)
c) Rural boys attending urban school	(0.71)
d) Rural boys attending urban college	(0.89)
4. *Social and welfare work*	
a) Rural boys attending rural school	(0.30)
b) Rural boys attending rural college	(0.27)
c) Rural boys attending urban school	(0.13)
d) Rural boys attending urban college	(0.04)

Conclusions and Implications

From the findings presented and discussed earlier, following conclusions can be summarized:

1. Majority of the rural school and college students spent most of their summer vacation in their villages.
2. The boys of all categories had high preference for educational and recreational activities during their stay in the village. But only the boys of urban institutions had high utilization of time for these activities.
3. All categories of boys had generally a low preference for farm operations and commercial aspects of farming.
4. Boys belonging to families with large size of farm holdings had more preference for farm operations, commercial aspects of farming and social and welfare work as compared to those belonging to families with smaller holdings.
5. Excepting those studying in rural schools, boys in other categories had low utilization of time for farm operations.
6. School boys had high preference for commercial aspects of farming as compared to college students. Utilization of time for this activity was low irrespective of school and college of rural and urban setting.
7. On the whole, the preferences of boys for social and welfare work were high but their actual utilization of time for this activity was low.

In the end, we offer a number of important programmatic suggestions for organisaion of appropriate educational and field action programmes.

1. Any programmes for mobilising rural youth for constructive work during summer vacation in their own villages will not face any problem of availability of the boys.
2. The low utilization of time for farm operations calls for the organisation of educational efforts to inculcate a sense of dignity of labour among rural youth. The departments of Agriculture, Education and Panchayati Raj can jointly promote such a programme on systematic lines.
3. The school and college vacation period should be synchronised with peak farm operations.
4. The younger generation should be actively associated in looking after commercial aspects of farming like procurement of farm inputs and marketing of farm products. This will develop necessary confidence among them for undertak-

ing such activities, which involve responsibility and decision-making ability. There is an apparent need for an educational programme for parents to motivate them for the involvement of their children in such activities.

5. The facilities for educational and recreational activities should be provided in the villages by strengthening school and college libraries, organising constructive recreational events like sports, organising rural youth clubs, etc.
6. The preferences of rural boys for social and welfare work should be positively channelized by encouraging them to take up responsibilities of developmental leadership in their respective communities. This will require systematic project planning in selected village clusters.

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DO ALL STUDENTS IN DEPARTMENTS OF STUDIES IN RELIGION CONSTITUTE A SINGLE POPULATION?

Although the study of religion has been going on in Australia for some time, as distinguished from theological studies, in various guises (Hayes: 1975), the study of religion as a regular academic discipline is a recent arrival on the Australian academic scene (Council: 1977, 57). The University of Queensland at Brisbane was one of the first universities in Australia to set up a separate department of studies in religion. Two departmental courses turned out to be quite popular: (1) RE. 101: Biblical Studies—New Testament, which had an enrolment of 60 internal students and (2) RE.108: Introduction to History of Religions, which had an enrolment of 51 internal students (Studies: 1977, 12).

As almost all the students enrolled were Christians; this could create the impression that they represented the same population. The purpose of the present study was to determine whether the students enrolled in these two courses differed significantly in their acceptance of Christian dogma. The inventory of religious belief developed by D. Brown and W. Lowe to measure the degree of acceptance or rejection of Christian dogma was used (see Appendix 1). This measure consists of fifteen statements to which five responses are possible, which are then measured. A score of 75 implies complete acceptance of Christian dogma; that of O complete rejection thereof.

The Methodology

This inventory was administrated to thirty students in each class. The individual scores for each statement for the entire inventory for each student in both RE.101 and RE.108 classes are calculated and are presented in Appendixes 2 and 3. It is clear from these figures that for RE.101: $\overline{X}_1 = 61.43$; and $S_1 = 10.39$ while for RE.108: $\overline{X}_2 = 48.53$ and $S_2 = 14.64$.

The question to be settled naturally was: is this difference in the means and standard deviations statistically significant. The null hypothesis was therefore tested for .01 level of significance or for a 99% confidence co-efficient. As is clear from Appendix 4, the critical value turned out to be larger than the computed statistic and the null hypothesis had to be rejected.

Another interesting aspect of the situation, as revealed by Appendix 5 is that the null hypothesis had to be rejected not only for the means but also for the standard deviations of the two samples, though in the latter case a lower level of significance was involved.

Inferences

The significance of these results will not be lost on scientific students of religion. These results clearly show that although all of the students were enrolled in the same department, i.e. studies in religion, they did *not* constitute a single population for the purposes of this enquiry. The students who took the course in the History of Religions differ significantly in their attitudes from those who took the course in New Testament in two ways:

1. Those who took the course in History of Religions were as a whole less committed to Christian dogma, i.e. were less accepting of it, than those who took the course in New Testament; and
2. Those students who took the course in History of Religions had greater variability in their attitude towards Christian dogma than those who took the course in New Testament.

Conclusion

To conclude, intuitively one would expect that students taking a course in History of Religions as a whole would be less committed to Christian dogma and display greater variability and attitudes towards it, compared to those students who take a course in the New Testament. This intuition, in this case, is confirmed by statistical analysis.

Appendix 1

INVENTORY OF RELIGIOUS BELIEF

This is a study of religious belief. Below are fifteen items which are to be answered in the following manner:

Place a line under *Strongly agree* if you agree strongly with the statement.

Place a line under *Agree* if you agree with the statement.

Place a line under *Not sure* if you are in doubt as to whether you agree or disagree with the statement.

Place a line under *Disagree* if you disagree with the statement.

Place a line under *Strongly disagree* if you disagree strongly with the statement.

Remember to read each statement carefully, and mark only one answer for each item.

People differ widely in their beliefs: please indicate your own in the manner described.

---

1. It makes no difference whether one is a Christian or not as long as one has goodwill for others.
2. I believe the Bible is the inspired Word of God.
3. God created man separate and distinct from animals.
4. The idea of God is unnecessary in our enlightened age.
5. There is no life after death.
6. I believe Jesus was born of a Virgin.
7. God exists as: Father, Son and Holy Spirit.
8. The Bible is full of errors, misconceptions and contradictions.
9. The Gospel of Christ is the only way for mankind to be saved.
10. I think there have been many men in history just as great as Jesus.
11. I believe there is a heaven and a hell.
12. Eternal life is the gift of God only to those who believe in Jesus Christ.
13. I think a person can be happy and enjoy life without believing in God.
14. In many ways the Bible has held back and retarded human progress.
15. I believe in the personal, visible return of Christ to the earth.

(Robinson and Shaver: 1973, 691-2)

Appendix 2

RE.101

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Q. 1	5	5	4	4	5	5	4	5	2	5	4	3	4	4	5	5	4	5	2	5	5	4	5	2	4	4	1	3	1	3
2	5	5	5	5	5	5	4	5	4	5	2	5	5	5	5	3	5	5	5	5	5	4	5	5	4	3	5	4	4	5
3	2	5	4	5	4	5	4	5	4	5	4	5	2	5	5	4	4	5	4	5	5	4	5	5	3	2	5	3	5	5
4	5	5	5	5	4	5	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	4	4	5
5	5	5	5	5	4	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	4	5	3	3	5
6	3	5	5	3	3	4	4	5	3	5	2	5	5	3	5	4	5	5	5	5	5	4	5	5	5	3	5	2	3	5
7	2	5	5	5	5	5	4	5	5	5	3	5	5	4	5	4	5	5	5	5	5	4	5	5	5	4	5	3	3	5
8	1	5	4	5	4	5	3	5	5	5	4	4	4	2	4	4	4	5	5	5	5	4	5	2	4	4	5	2	1	4
9	1	5	1	2	5	4	4	5	5	5	3	5	1	2	5	4	4	5	1	5	5	4	5	2	1	4	5	3	3	5
10	5	5	5	5	4	5	3	4	5	5	5	5	5	5	4	4	4	5	5	5	5	5	5	2	5	4	5	4	4	4
11	1	5	5	5	3	5	4	5	4	5	2	5	2	4	5	2	5	5	5	4	5	4	5	4	4	2	5	3	3	5
12	1	5	1	4	4	5	4	5	2	5	2	5	1	2	5	4	2	5	1	5	5	3	4	2	1	2	5	3	3	5
13	2	5	5	5	1	5	2	1	2	3	2	1	4	1	4	2	2	5	4	4	5	4	4	2	2	2	2	2	2	5
14	4	5	4	5	4	5	3	5	5	5	4	5	4	2	5	4	4	5	4	5	5	4	5	2	4	2	5	4	1	5
15	2	5	3	2	3	5	4	5	4	5	3	5	2	3	5	4	5	5	1	5	5	4	5	2	3	2	5	3	3	5
TOTAL	*44*	*75*	*61*	*65*	*58*	*73*	*54*	*70*	*60*	*73*	*50*	*68*	*54*	*52*	*72*	*58*	*63*	*75*	*57*	*73*	*75*	*61*	*73*	*50*	*55*	*46*	*68*	*46*	*43*	*71*

Appendix 3

RE.108

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Q. 1	5	4	1	1	1	3	5	5	1	4	3	2	4	3	2	5	5	1	4	4	4	2	5	2	1	3	1	4	1	1
2	4	4	2	3	1	2	5	4	3	2	4	1	3	5	3	5	5	3	5	2	5	1	4	4	5	2	5	5	3	5
3	5	5	2	1	2	5	5	4	2	1	5	1	2	4	3	5	4	3	2	2	4	2	5	4	4	5	3	4	3	5
4	5	5	4	5	4	2	5	4	4	4	5	4	3	4	4	5	5	3	5	4	4	5	5	3	1	5	5	4	4	4
5	5	5	1	3	4	4	5	5	3	3	4	5	3	4	3	4	5	3	2	4	4	3	5	3	5	4	5	5	4	4
6	4	4	3	1	3	2	5	3	3	1	3	1	3	5	3	5	5	3	3	2	5	2	5	4	5	4	3	4	3	3
7	4	5	2	1	2	3	5	2	4	3	5	1	3	5	4	5	5	3	4	2	5	2	5	4	5	4	5	4	4	2
8	4	2	3	5	1	1	5	4	3	2	2	2	2	2	3	5	5	3	2	3	5	1	5	4	5	2	2	4	2	3
9	4	5	2	1	1	1	5	2	1	1	1	1	2	4	2	5	2	1	2	1	4	1	5	4	2	2	2	4	1	4
10	5	5	1	4	2	4	5	5	1	2	4	1	4	4	2	4	5	2	5	2	5	1	5	4	4	4	4	2	1	4
11	5	5	1	1	1	3	5	2	3	3	3	2	3	4	2	5	4	3	4	3	4	1	5	3	4	4	5	4	1	5
12	4	1	1	1	1	1	5	2	1	1	1	1	2	3	2	5	1	3	2	2	4	1	5	3	5	2	2	4	1	5
13	2	3	2	1	2	2	5	4	1	2	5	2	2	3	2	4	5	3	2	2	2	2	5	3	5	2	2	5	3	5
14	5	4	4	3	1	2	5	5	2	1	1	3	3	4	4	5	2	4	4	2	5	2	5	4	5	2	2	5	3	5
15	5	4	1	1	2	2	5	3	1	2	3	1	3	4	3	5	5	3	2	2	3	1	5	3	5	4	4	4	3	4
TOTAL	*66*	*61*	*30*	*32*	*28*	*37*	*75*	*54*	*33*	*32*	*49*	*28*	*42*	*58*	*42*	*72*	*63*	*41*	*48*	*37*	*63*	*27*	*74*	*52*	*61*	*49*	*50*	*62*	*37*	*59*

Appendix 4

RE.101	RE.108
$\bar{X}_1 = 61.43$	$\bar{X}_2 = 48.53$
$n_1 = 30$	$n_2 = 30$
$S_1 = 10.39$	$S_2 = 14.64$

The level of significance chosen for acceptance or rejection of null hypothesis is 0.01. If computed statistic falls between ±2.58, null hypothesis is accepted, otherwise rejected. Normal distribution is assumed. The critical ratio turns out to be 3.93 (Mason: 1973, 224).

The null hypothesis is rejected.

Appendix 5

ANALYSIS OF VARIANCE

We wish to test the hypothesis that $\sigma_1^2 = \sigma_2^2$ as against the hypothesis that $\sigma_2^2 > \sigma_1^2$. We note that F29, 29, 0.05 = 1.8543. But the deserved value of $S_2^2/S_1^2 \frac{(14.64)^2}{(10.39)^2} = 1.985$, which is greater than 1.8543. Hence the null hypothesis is rejected and we conclude that $\sigma_2^2 > \sigma_1^2$. It may be noted that the level of significance used here is 0.05 as against 0.01 in the case of the means.

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Arvind Sharma

OBSCURANTISM AMONG THE UNIVERSITY STUDENTS

> "....*Significance of Science consists in its insistance on the cultivation of reason and experimental observations. This is a vital factor in any cultural pattern and individuals will turn obscurantists if reason is not given its proper place in the cultivation of a balanced personality.*" (*Gokak*).

Gokak has made it emphatically clear that scientific attitude is a sine qua non for the development of a society. If education fails to cultivate the spirit of experimentation and habit of basing conclusions on verifiable facts, the people will lapse into obscurant and dogmatic behaviour. Obscurantism acts as a powerful deterrent to all the forces of progress and development.

It is the characteristic of human mind that it offers explanation to events. If the explanation is not scientific it is found to be obscure to some degree or other. One of main purposes of education should, therefore, be to cultivate among the students scientific thinking and dispel all obscurant saying.

Aiyar rightly quotes Mathew's view, "What India needs is a training in scientific method and the development of a critical approach to every things. (Aiyar). Best education is served in the universities. University is the 'community of scholars' only and its true function is not merely to add and revise facts in relation to an accepted framework, but to be ever examining and modifying the framework itself. Within the confines of a University, knowledge is its own end not merely a means to an end. The essence of the institution is epitomized by the spirit of free enquiry to follow the argument whatever it may lead; to examine, question, dispute or rework customary ideas and beliefs. To a scholar unchangeable dogma and hypothesis are fundamentally incompatible and the concept of an immutable doctrine is repugnant to the very life spirit of a university.

As scientific knowledge spreads among the population and becomes a part of every day life, it must result, inevitably, in the weakening of cultural dogmas. Superstitions might, of course, persist like fossils in certain cultural pockets even in most advanced nations, as among the Mennonite-Sect in the United States. But these donot hamper the national decisions, taken by the professional bureaucracy or political leadership.

Intellectual modernization must lead to promotion of scientific research in many fields and the pursuit of a well planned science policy. A society does not become modern in a true sense until science becomes a part of the life of people. A scientific outlook must become part of the life of the common people if a society is to become modern.

In the light of above discussions many observations for a long time were made inside the campus and elsewhere in the society and found that often people though highly educated talk in a very unscientific way. It is not only to this extent but they have very strong faith in such beliefs which have not been established rationally and scientifically. It was the case not with laymen but with University products too. Personnel in the universities also believe that some instance in their life is veiy fortunate and at that very instance they should start any business. They feel that every happening of their future life is already ascertained by God. Omens whether good or bad are practised by these educated persons and commit personal and social loss.

Why this Study?

In the above described situations it was realized necessary to study the belief patterns of University students to measure the degree of obscurantism. It was also thought to see the effect of higher education in eradicating the obscure beliefs among them. All beliefs are not undesirable but only obscure beliefs. Therefore, the need for the study was felt.

Definitions of the Terms

In order to make the communication effective the principal terms in this report are defined as follows:

Obscurantism: The dictionary definitions of the term are as follows:

"The practice or principles of those who strive to prevent enlightenment or the progress of knowledge."

"The act of striving to prevent enlightenment or to hinder the progress of knowledge and wisdom."

The above definitions clearly indicate that obscurantism is anti-scientific in nature and it darkens the rationality among individuals to think about an object, a situation, faith, dogma, superstition etc.

University students: Those individuals who are engaged in learning process in the University being enrolled in this after having passed their secondary education. Students of P.U.C., Undergraduate classes, Post-graduate classes, Research scholars and Post-research scholars are known as *University students.*

Delimitations of the Problem

1. Only Banaras Hindu University was included in the study. Two other universities of the city were excluded due to paucity of time and other resources.
2. Obscurantism may be eradicated by higher education, therefore, Post-graduate students were selected to see whether they still believed in obscure beliefs.

3. A sample of 370 students was used for item analysis and 400 students for the whole study.
4. Religion was not kept as a variable here in this study because most of the students belong to Hindu religion.
5. Caste was not studied as a relevant or irrelevant factor because it does not seem very ethical to talk much about caste.

Objectives of the Study

The main objectives of this study were as follows:

1. To construct a belief inventory to assess the extent of obscurantism among the University students.
2. To study the degree of obscurantism among university students.
3. To study obscurantism in relation to students' residence (hosteller/day-scholar), orientation (rural/urban), sex (male/female), their fathers'/guardians' income, profession and qualification with their faculties of study.

Hypotheses

In this study following hypotheses were tested:

1. The students belonging to the different faculties in the university do not differ in the degree of obscurantism.
2. The students coming from rural areas do not differ in their degree of obscurantism from the students coming from urban areas.
3. Male and female students do not differ in their degree of obscurantism.
4. There is no effect of income, qualification and profession of the fathers/guardians on the scores of their wards on the obscurantism scale.

Method of the Study

Descriptive survey method was adopted to conduct the study.

Tool: A self-made 'Personal-Belief-Inventory' was used as the tool to collect data in this study. It comprised 44 statements which express belief in obscurantism and scientific attitude. Thirty-eight items express obscurantism whereas six items scientific attitude.

Sample: 400 post-graduate students from 10 faculties were included by three techniques of sampling viz. random, stratified and cluster.

Statistical Technique Used: Frequency distribution, Mean, S.D., Correlation Coefficient t-test and one-way analysis of variance, were used for the analysis of data.

Results:

Systematically obtained and organised data were statistically analysed and objectively interpreted.

Obscurantism and Stream of Study

Table 1

SAMPLE SIZES(N), MEANS AND STANDARD DEVIATIONS (S.D.) OF THE TOTAL SAMPLE AND SUB-SAMPLES FROM TEN FACULTIES

	Faculties										
Statistics	*Total sample*	*Arts*	*Commerce*	*Agriculture*	*Law*	*Technology*	*Education*	*Social Science*	*Sanskrit*	*Science*	*Medicine*
N	400	40	40	40	40	40	40	40	40	40	40
Mean	31.55	37.00	37.25	32.25	32.25	24	29.25	33	55.25	33	12.25
S. D.	18.60	14.62	18.16	20.78	17.66	12.04	15.74	12.36	11.66	17.46	12.72

Table 2

SUMMARY OF ONE-WAY ANALYSIS OF VARIANCE FOR 10 GROUPS OF STUDENTS STUDYING IN THE DIFFERENT FACULTIES

Source	*df*	*SS*	*MS*	*F*	$\frac{df_1}{df_2}$	*Significance*
$SS_{col.}$	9	27330.08	3036.6	13.1	9/190	S*
SS_{error}	190	43934.80	231.2			
SS_{Total}		71264.88				

S — Significant.*

Findings

1. Table 1 reveals that Sanskrit students have scored highest followed by Commerce, Arts, Social Sciences, Science, Law, Agriculture, Education, Technology and Medicine in order of rank.
2. Table 2 reveals that there is significant difference among the mean scores of the students belonging to different faculties. (Hypothesis being rejected).
3. Sanskrit students are highly obscurant because their home, college and social environments are full of the beliefs belonging to the various dimensions of obscurantism viz. old tradition, superstitions, beliefs in obscure saying etc.
4. The Medical and Technology students are less obscurant because Science courses develop scientific attitudes in them.

Obscurantism and Orientation (rural/urban)

Table 3

MEAN, S.D., *t* VALUES BETWEEN RURAL-URBAN SUBSAMPLES ON OBSCURANTISM SCALE

Residence										
Rural (I)			*Urban (II)*			*t value*	*Degree of freedom (df)*	*p*	*Direction of difference*
Mean	*S.D.*	*N*	*Mean*	*S.D.*	*N*				
34.12	18.44	211	33.86	18.46	189	.14	398	N.S.*	

**N.S. = Not Significant at .05 level of significance.*

Findings

1. Table 3 presents that means of the two groups do not differ significantly and therefore hypothesis No. 2 is not rejected.
2. From the Table 3 it is clear that the two groups are alike with respect to obscurantism. May be that cultural and religious overtones of "Banaras" influence the rural and urban sectors equally.

Obscurantism and Sex

Table 4

MEAN, S.D. AND *t* RATIO BETWEEN MALE AND FEMALE STUDENTS ON OBSCURANTISM SCALE

Sex									
Male			*Female*			*t value*	*df*	*Significance*	*Direction of difference*
Mean	*S.D.*	*N*	*Mean*	*S.D.*	*N*				
33.10	13.45	67	32.81	15.39	53	.11	118	N.S.*	

**N.S. Not significant at .05 level of significance.*

Findings

1. Table 4 indicates that difference between means of the two groups are not significant and therefore Hypothesis 3 is not rejected.
2. Difference of mean tested for significance reveals that the two groups are alike with respect to obscurantism. It is likely that boys and girls staying together for a considerable time in class rooms, libraries and other social and cultural activities on the campus are exposed to almost identical social climate, literature and information media.

Obscurantism and Present Residence (Hosteller/Day Scholar)

Table 5

MEAN, S.D. AND *t* VALUES ON OBSCURANTISM BETWEEN HOSTELLERS AND DAY SCHOLARS

Present Residence									
Hosteller			*Day scholar*			*t value*	*df*	*Significance*	*Direction of difference*
Mean	*S.D.*	*N*	*Mean*	*S.D.*	*N*				
30.72	20.71	275	34.18	16.15	125	1.16	398	N.S.*	

**N.S. Not significant at .05 level of significance.*

Findings

1. The test of significance for the difference of means of the two groups reveals that the difference between these groups are not significant.
2. From the above table it is clear that present residence of the Students (Hostel/City) is not relevant to the degree of obscurantism.

Obscurantism and Guardians' Qualification

Table 6

MEANS, S.Ds. AND *ts* BETWEEN PARENTS/GUARDIANS OF FOUR LEVELS OF EDUCATION ON OBSCURANTISM

Level of Education											
I-Illiterates			*II-Literates upto High School*			*III-High School & Intermediate*			*IV-Graduate & above*		
Mean	*S.D.*	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*	*N*
39.15	19.15	56	38.29	17.69	29	39.54	16.64	107	29.50	18.50	208

Groups compared	*t values*	*df*	*Significance*	*Direction of difference*
I, II	.36	83	N. S.* at .05	
II, III	.30	134	N. S.* " .05	
III, IV	4.92	313	S.* " .01	III>
IV, I	3.50	262	S.* " .01	I>
IV, II	2.43	235	N. S.** " .01	
			S.** " .02	II>
			S.** " .05	II>
I, III	.13	161	N. S.**** " .05	

The above table brings out the following facts to light:

1. The wards of illiterate and High School pass parents do not differ significantly in their degree of obscurantism.
2. The groups compared (I & II, II & III, I & III) are more or less identical.
3. Significant differences have been obtained between the mean scores of group I and IV (having graduate education or beyond) group II & IV; and group III & IV.

Obscurantism and Parent/Guardian's income

Table 7

MEANS, S.Ds. AND *t* VALUES OF THE STUDENTS BELONGING TO FOUR INCOME GROUPS OF THEIR FATHERS/GUARDIANS

Income — Groups											
0 to Rs. 300 I Group			*Rs. 301 to 650 II Group*			*Rs. 651 to 1450 III Group*			*Rs. 1451 & above IV Group*		
Mean	*S.D.*	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*	*N*
37.91	18.41	126	28.02	17.46	131	26.10	18.00	100	28.92	17.94	43

Groups compared	*t value*	*df*	*Significance*	*Direction of difference*
I, II	3.96	255	S*	I>
II, III	.85	229	N. S.*	
III, IV	.96	141	N. S*	
IV, I	2.72	161	S.*	I>
II, IV	.29	172	N S.*.	
III, I	4.87	224	S.*	I>

Findings

1. The students belonging to poor economic status score more than those who belong to higher economic status, on this scale.
2. The mean score of the students whose guardians earn upto Rs. 300 per month differ significantly from the mean scores of any other group of income (group II, III, IV in the above table.
3. The students whose guardians earn Rs. 301 to 650, Rs. 651 to Rs. 1450, Rs. 1451 and above, do not score significantly different on this scale.

Obscurantism and Parents'/Guardians Profession

Table 8

MEANS, S.Ds. AND *t* RATIOS OF THE FIVE PROFESSIONAL GROUPS

Professional Groups														
I Service			*II Business*			*III Agriculture*			*IV Teacher*			*V Professional*		
Mean	*S.D.*	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*	*N.*
26.92	15.26	91	34.64	18.82	69	38.25	18	144	28.84	19.60	85	27.19	36	56.13

Groups compared	*t ratios*	*df*	*Significance*	*Direction of difference*
I, II	2.86	158	S*	II>
II, III	1.34	211	N.S.*	
III, IV	3.34	202	S.*	III>
IV, V	.31	94	N.S.*	
I, III	4.99	233	S.*	III>
I, IV	.68	149	N.S.*	
I, V	.20	125	N.S.*	
II, IV	1.44	127	N.S.*	
II, V	1.82	103	N.S.*	
III, V	3.14	178	S.*	III>

Findings

1. Table 8 indicates that professions of the guardians affect the degree of obscurantism differently among their wards.
2. The students coming from agriculture and business-based families are more obscurant in comparison to the wards of teachers, servicemen and professionals.
3. The wards of teachers, servicemen and professionals do not score significantly different among themselves on the obscurantism scale.

Conclusion

The findings of this study, in themselves do not indicate conclusively that University education is unsuccessful in eradicating beliefs in dogmas, superstitions and unscientific explanations of the natural phenomena, because data on the degree of such beliefs among the general population are not available as yet. But some findings are revealing and permit of suggestive conclusions. The science-based courses such as Medicine, Technology and Physical Science tend to reduce the degree of obscurantism, whereas Sanskrit and Arts courses as they exist in this University seem to be ineffective in building Scientific attitude (opposite of obscurantism). Home seems to be an effective means of developing scientific attitude or obscurantic beliefs because parents' education and profession which determine the tone of the family are the variables relevant to obscurantism.

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Harikesh Singh

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Communications

"BRAIN DRAIN—THE MISSING PERSPECTIVE" : A COMMENT*

Kamal Nayan Kabra's 'missing perspective' of brain drain[1] makes an illuminating study focussing as it does on the element of neo-colonial exploitation involved in what he calls a 'reverse transfer of technology' (through emigration of high quality manpower from the developing to the developed countries, particularly to the USA). But the conclusions that he draws on policy formulations in a less developed country (LDC) seem to contain certain sweeping generalisations based on a naive omnibus approach to all hqm (high quality manpower). Kabra, for example, prescribes an indiscriminate closure of the borders to prevent the exodus of manpower. His conclusions follow from a preconceived notion of hqm somewhat similar to what Solow called 'capital-jelly'—a concept formulated to put capital in a standardized homogeneous framework. But to talk of all skilled people as of a single category without any consideration of the heterogeneity in the type, quality and excellence of skill and, in fact, of the entire hierarchy of professions is surely too simplistic.

Once the distinctions, however broad they may be, between the professional, technical, skilled etc. personnel and those between the 'high quality' and the 'low quality' 'brains' are recognized the conclusions that would follow even from a nationalistic standpoint of the Kabra-type analysis would turn out to be somewhat less than radical. Mahbubul Haq[2], in fact, talks about the feasibility of such a classification of personnel into 'low quality' and 'high quality' skills. He refers to the case of Pakistani cafeteria men abroad whose remittances make up a major share of the country's national income. These people would certainly come under the socalled 'low quality' brains group. Similarly, it is the scientists, engineers, doctors and teachers etc. who can be grouped as the 'high quality' brains. These distinctions of manpower groups might also facilitate a broad classification of the overall brain exodus into, what I would suggest, 'brain export', 'brain overflow' (through 'safety-valve' operation), and 'brain drain' (proper). A little elaboration on these distinctions would certainly highlight their implications for the problem.[3]

Brain movements can very often assume similarity with the movements of factors of production across the countries and hence can be treated as brain export. Analogous to commodity exports, the intellectual capital in a country can also be exchanged for a 'price' in the international market, though not without a few obvious problems of standardization. If the return (in the form of monetary remittances and qualitative or subjective linkages) from the skilled personnel abroad covers at least their opportunity costs in alternative 'uses' at home then it may be considerably treated as a case of 'brain export'. This return would have to be the social return which covers the individual gains as well; individual and personal gains, even if they are very large, would otherwise be put at a discount if they accrued at the cost of social welfare being brought down. The opportunity cost must, therefore, include not only the private costs but also the social costs and in a big way, since, these are supposed to be quite high in terms of the subsidies in skill formation. To provide a concrete example of the 'brain export' case one can think of a country like Jordan where the health of the economy is greatly dependent on the remittances of her trained people in the neighbouring Arab nations. Similar would be the case of Indian nurses emigrating from Kerala. This is feasible because there are categories of skill where the production of educated personnel for export may not involve inefficiency from the global point of view in the sense that the country, for the purpose, may enjoy a comparative advantage in their production.

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* I was greatly benefitted by the valuable discussions I had with Professor Tapas Majumdar and Professor Suresh Shukla separately over the issues involved in this communication.

A 'brain overflow' category would comprise of three component parts, all having the safety-valve stabilisation effect on employment in the sending economy. These are:

(i) the overflow of the high quality manpower overproduced and hence unabsorbed within the economy. This has been significantly evidenced in less developed countries like India where the structure of education, particularly of higher education, is such that they produce skilled professional and technical personnel at a rate which is at very much discrepancy with the rate of growth of vacancies. Examples may be drawn from the Indian engineering graduates—a category where the scope of self-employment is minimal—moving out of the country in large numbers because of non-employment at home and the 'students abroad' who could not be called back on offers of employment at the completion of their training;

(ii) the overflow of the high quality manpower absorbable in some capacity but not optimally usable in the country due to (a) the employment and technological bottlenecks in the economy and/or (b) the psychological expectations (unsatiated or undersatiated) of even the employed brains. Whereas the first could be a hypothetical case of India producing "skylab engineers" and then losing them to the USA, the second has been our broad experience of losing all types of educated people employed in jobs and positions which are unsatisfactory to them; and

(iii) the overflow of the non-first-raters produced probabilistically due to the peculiarity of the skill formation process. This happens in the most specialised fields of higher education, e.g., nuclear physics. In producing some five or six top-ranking world-class nuclear scientists any country would have to enroll some fifty or sixty, or any other number of talented science students in some particular courses. Those not coming out on the first five or six positions would form an unabsorbable 'surplus' in the sense that they may not be indispensable for the economy. It is no wonder then that these surplus people would have a high potentiality for emigrating to other countries. While the first component (a) comes as a welcome relief to the labour surplus economy, the second and the third components (b) and (c) in the total brain overflow are neither easy nor useful to be stopped.

Over and above these two categories of brain exodus with minimum welfare reducing effects there is the welfare cutting residual component inherent in the emigration of the 'exceptionally talented' and the 'key' individuals. This arises when the high leverage and linkages lost with the exit of the scarce and the critical manpower is not and/or cannot be compensated by the so-called remittances or the returns. This last component would make what should properly be termed as 'brain drain'. This would be the case when the country instead of losing the 'surplus', loses (a) the five or six top nuclear scientists mentioned above and (b) the average scientist who has otherwise acquired a long on-the-job experience in some critical 'key' position.

The usefulness of such a categorisation for educational and manpower planning would, however, be cultivable more in a short time-horizon than in a long time-horizon. For, a long term plan would open up vistas where the policy requirements may be visibly different. Notwithstanding the fact of this issue being quite provocative, on an assumption of zero operational and information costs involved in the above type of short-term static analysis the brain export may be allowed for some time, brain overflow temporarily, with structural and long-term efforts being directed towards correcting the current brain drain and eventually the whole exodus of the 'essential' skills. This is because in the long run a classification between brain export and brain overflow may become quite deceptive in the sense that conditions for overflow may themselves be created and in those categories of skills which are allowed to move out under a discriminatory 'brain export' policy by a shift in the pattern of demand for higher education itself. That is to say, an argument allowing and justifying a brain export or a brain overflow is essentially time-bound. The long-run classification between brain drain and simple brain emigration has to be based on a different but not irrelevant set of policy objectives. This has to be one of an indirect attack, aimed at causes rather than symptoms and hence more permanent. This may come from an imaginative educational policy supported by a scientific manpower planning and, ultimately, in pushing the country forward in its quest for a sound socio-economic order. Such structural reforms, and not reforms merely in emigration controls have to be focused upon to put the problem of brain drain in the perspective of a long-run developmental plan. The short-run policies based on the type of classification mentioned above may help in bringing about these structural changes speedily and systematically. On the other hand they may only confuse the issues. Categories not appearing as brain drain today, can reappear under a different set of values or under different time-horizon. It is, in fact, this realization that makes the study of brain exodus both difficult and challenging.

However, the important issue hidden in the problem of brain drain as a result of the neo-colonial path of development is the advantage that the DCs reap at the cost of the LDCs. It arises not only from the cost-of-training and wage differentials in the two types of economies but even more from the *convenient option* left to the DCs: they can open the 'inward safety-valve' increasing the intake of manpower from abroad or close it (whenever they wish) thereby avoiding the creation of unpleasant disequilibria in their own economic as well as social system. Obviously, there will always be in the developed countries a racist viewpoint which will put immigration at a discount on account of fears of some, perhaps imagined, social harmony being disturbed.

On the other hand, the qualitative component of the intake of the developed countries is also such that it conforms to the elimination of those elements the presence of which is perhaps necessary for any radical restructuring of the polity and the economy of the less developed country. For example, emigration of educated manpower has been justified many a times to be fostering and maintaining peace and order in the society by keeping away the desperate and the disgusted educated unemployed. Such assertions can be traced to be implicit in the type of argument given by Bhagwati and Hamada[4] that in many sensitive spots of the economy unemployment among the educated "may .... even [prove] more explosive than among the uneducated, as is evident from the fact that the leadership of the revolutionary movements in Calcutta, for example, has derived from the unemployed, educated students" and hence emigration of educated people is beneficial to the country. But this is only the partial picture. There is more to it than the naked eye can perceive. Because, the exist of the dissentients from the country would mean an unconscious postponement of the 'creation of demand' for social and economic changes within the economy and thereby strengthening of the old structure of an elite-feudalism. This weakens unionization both at home and abroad and thus works against the interests of the majority. Domestic unionization is impaired due to the loss of more vocal and sensitive members whereas in foreign countries the strength of the unions is weakened by the presence of alien workers in the labour market.[5] Emigration, therefore, increases the 'waiting for Godot' by avoding the identification of the relevant problems on the one hand; on the other, it serves the interests only of the elite groups by removing the potential and the actual threats at home and in foreign countries respectively. In addition to these, migration waves also create neo-colonial linkages in ideas and economy which may assume importance from the standpoint of political economy. And it is because of these linkages that the education and manpower policies in the less developed economies have a built-in-orientation towards satiating the type of needs the DCs have. This makes the LDCs' educational institutions to serve more like a nursery house for the DCs' economies rather than to serve their own interests.[6]

Any policy towards stopping the emigration of skilled manpower from the LDCs has, therefore, to take into consideration these two issues of the DCs' 'convenient option' and the 'fermenting process' of change in LDCs and their implications in the latter. Kabra's thesis with these two interrelated qualifications added should have a more practical and a more pragmatic look than what seems it has. Another important point that I would like to emphasize here is the necessity of undertaking brain drain studies based not on the skill movements between the developing and the developed countries as such but on the typology of the particular skill-importing country. With the growth of oil power in the recent years the direction of the migratory wind from LDCs has also taken a new turn towards the newly rich oil nations of the Middle-East—a group certainly distinct from the developed countries of the West. Skill emigrations to the two groups of countries might vary from each other in respect of their implications on the sending country and therefore they ought to be studied separately and differently when these variations are significant.

Lastly, I would like to draw attention to a small contradiction inherent in a Kabra-type version of the extreme 'nationalist' argument. First, it is emphasized that the adoption of western education and technology in the LDCs are breeding "uprooted and detribalised hqm ever eager to move out"—a result of the neo-colonial path of development. Kabra says, "By increasing the supply of dcs' technology and reducing the availability of indigenous technologies in the ldcs, it makes them increasingly dependent on import of technology ..."[7] His very next argument says, "the loss of hqm is not only a loss of technology which they can 'produce' but is also *a severe reduction in the capability of the emigrant countries to borrow and assimilate foreign technology*".[8] This position would seem to be incompatible with the first because the technologies bought and imported from a 'highly imperfect technology market' are assumed to be grossly 'inappropriate' to the need and development of the developing economies! Secondly, Kabra's latter argument, taken in isolation from the former must have implicitly assumed as indispensable complementarity between the two factors—local hqm and imported technical knowhow. However, such a relation, even if it exists, needs empirical justification. The search of low-wage-cost locations by the MNCs (multinational corporations)[9] is a clear evidence for example, of the fact that there is often a substantial substitution possibility between skilled and unskilled labour in modern technology-using processes.

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6. A few measures and evidences have appeared in recent literature to confirm the hypothesis of this neo-imperialist exploitation of LDC by the DCs. See Khadria, B.K. *Op. Cit.,* pp. 54-60.
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9. I am indebted to Alokesh Baruah for many useful insights into the working of the Multinationals.

Binod Kumar Khadria

HEALTH CARE SERVICES, MEDICAL EDUCATION AND SOCIAL SCIENCE RESEARCH*

If exploring social reality and pointing out the links in the process of transformation of that reality is the purpose of all social sciences, the N. Jayaram's effort to investigate social implications of medical education in India leaves much to be desired. Inspite of its long list of references and impressive quotations it leaves one at a loss as far as the author's conceptual and methodological convictions are concerned. The reason perhaps is the growing trend among social scientists to "apply" social sciences to a technical field without fully familiarising themselves with that field. Also, at times, the issues in social sciences themselves are not fully understood before an attempt is made to explore their impact on specialised fields like medical care or medical education.

Jayaram's basic problem is that he examines the institution of medical education in total isolation. Had he seen it within the context of the society at large, it would have been easy to recognise that in a stratified society like ours, the sociological challenge does not lie in highlighting the elitist nature of its institutions. It lies in understanding and exposing the mechanisms of perpetuation of its various institutions. These mechanisms are located within the institutions and the relationship that they have with the larger socio-economic and political structure. His feeble efforts at a historical analysis do not bring out any of the social forces which moulded medical education in independent India. If the British had their vested interests what about the national government? With all its "concern over the state of medical education in the country", what prevented it from reorienting medical service and education? Jayaram only brings out the expressed concern of professionals and the government for medical education and also the fact that nothing has actually been done. He never asks the question 'why' and never tries to look for sociological reasons of this impotent concern. The result is that the class base, vested interests and value system of medical students is pointed out but their links with those who control the system, lay down policies, prepare plans and execute them is totally ignored. Hence no links are established between the subsystems of medical education and health services, and these subsystems and the larger social system.

Had he examined the earlier efforts at building a national health service he would find that some ground work had been done as early as 1946 to prepare plans for an integrated health scheme with emphasis on free medical care to all irrespective of their paying capacity.[1] These plans were then flouted by the very section of people—health administrators, politicians, bureaucrats—some of whom kept expressing their concern and opinion about what is desirable. The reports of Committee's set up by the national government, like Health Survey and Planning Committee 1961,[2], Medical Education Committee 1969,[3] and the Medical Council of India's recommendations on medical education, 1971[4] are evidences to prove that deliberate efforts were made to maintain the existing structure of medical education, to promote specialisation and to create a lopsided medical care delivery system which absorbed willingly the products of medical education. Blaming the British alone is certainly not enough when the roots of the malady lie in our own social structure.

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* A Note on N. Jayaram's Paper on Social Implications of Medical Education in India.

Jayaram's next problem is his apparent unfamiliarity with the health system and its demands on medical education. Throughout the paper there is a confusion regarding quality of medical education. Despite all his doubts about the social relevance of "both the product and the educational structure meant to produce it", he seems to have the same western model as his point of reference when it comes to quality. It is this understanding which is reflected when he holds expansion of services responsible for the impairement of quality in the first quarter of the 20th Century. Also, when he quotes that "the penetration of modern medicine into the country side has been so slow that there is no prospect of providing medical relief in the rural areas of India of a standard approaching that of the developed countries or of India's own urban centres for generations to come". For him then, the major problem is population coverage with adequate numbers of doctors rather than the content of their education and training. In other words quality of health care is presumed to be a consequence of numbers of doctors. It is not realised that efforts to increase the numbers of doctors or their motivation to work among poor, cannot overcome the handicap of inadequate preparation for the same, during the training period. The point that is missed by him is, that, even if we have the required doctor population ratio—which needs only the division of the total population by adequate number of doctors—we would still be unable to meet the health needs of the majority. This is so, firstly because today's doctor is trained to serve only certain sections whose medical problems he is taught to handle. Secondly, because most doctors themselves find it more desirable to work with these sections and hence make little effort to question their own education and training. Finally, it is this section of the elite and their physicians who by their dominant, vocal and privileged positions, decides the social objectives of medical education.

It appears then that Jayaram's misplaced emphasis on numbers arises out of a lack of understanding of the interdependence of medical education, medical research and health care delivery system and the influence of dominant social forces upon these. Had he traced this relationship he would have found that the apparent inconsistancy between the needs of the majority and the nature of education of the physicians is only a reflection of the effort of the more privileged to promote their own welfare. These classes try to mould the content of education, research and health services and evolve measures for its quality. Expansion of such a system of education and service, therefore, can never serve the interests of the majority effectively and without any strings. The reason is simple, the needs of the majority and the quality of services required for them are quite different from those required by the privileged classes. The concept of quality is a value loaded concept. If due to professional, social or political reasons, the social objective shifts to catering to the needs of the majority, then, a new concept of quality would be required. There, the content of health services would be determined by the needs of the majority. In that situation, the role of the doctors and hence their training would be determined by the requirement of that health service. The present educational system would loose much of its relevance.

Given the above contention, without a proper understanding and evaluation of the health needs of the majority, the best possible services that can be evolved within the available resources and the constraints in implementing it, suggestions like "India's health needs seem to be one of large supply of motivated doctors to serve on a community basis, produced at a very low cost and in a short period of time" do not carry much conviction. They reflect a simplistic approach to a much more complicated issues of education and training and motivational processes. Like all the experts that are quoted, Jayaram also tells us what seems to him, the need of the country. However, he leaves us guessing as to how our elitist system of medical education could start producting the required motivated doctors. Specially when the facts about urban concentration of doctors and their high migration rates indicate that motivational content of the present education and training has an entirely opposite impact.

Even if we take Jayaram's analysis of the structure and function of the medical education in India there are certain crucial methodological issues. Firstly, the examination covers only admission procedures, total duration of the course and costs. It does not touch the structure of the curriculum, selection of teachers and the system of checking standards that have been evolved. Secondly, his data base and selection procedures are highly questionable. To talk of structure of medical education in India on the basis of two medical colleges which are not even randomly selected and further, to project the class base of medical students out of a sample of 200 medical students of these medical colleges one of which was a private college, without specifying the sampling details is nothing short of jugglery with figures. Jayaram's conclusion may be right but it does not absolve him from the methodological rigours of research, in the name of which he gives us guesses as good as any intelligent person can make. The discussion reflects a similar disregard for systematic analysis. For example, Jayaram selects two questions of sociological importance. One, whether such a complex and prolonged educational system is needed keeping in mind the medical needs of the country and second, if it continues, what are its latent consequences. While the first question is never actually discussed, the answer to the second points out elite perpetuation, brain drain and poor medical care as consequences. This in fact is only a statement of what probably is the state of affairs. A discussion of consequences certainly demands an analysis of the impact of increasing unemployment among doctors and the tensions that this might create among ruling classes themselves. It also calls for the analysis of heightening class tensions between the haves and the have-nots, which grow as a result of growing inequality in the health system and the impact of the efforts that are made to mop-up discontent. All this is surely going to have its impact on medical education system which cannot go on functioning as an independent institution as projected by Jayaram. There is a hint of suspicions regarding the "socialistic and egalitarian" claim of the society because its institution of medical education seems to run counter to such an objective. This doubt does not take the concrete shape of an effort to understand society and its influence on the structure of medical education. It is logical for him then, that he traces all source of resistance to change to "the vested interests in the profession". Thus, initially the society is acquitted of all its responsibilities and later we are offered two profound generalisations about reposing our faith in political programme for change in the system and the need for a radical transformation of economic structure. If all this while, Jayaram was arguing that the most formidable obstacle to radical change in medical education system comes from the vested interests within the medical profession and if that vested interest is capable of perpetuating itself indefinitely and independently from the society at large then how is economic transformation relevant?

This certainly is not the desirable way of "filling in gaps" in our knowledge. Instead of adequately mobilising empirical data to illustrate the reality of medical education and then systematically analysing it in its entirety we are heaped with contradictory statements and ad hoc suggestions. Even if some of these are correct, they do not arise out of the logic of the preceeding discussions. One really wonders whether the effort fills in a gap in our knowledge of medical sociology or reflects that gap.

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I. Qadeer

CAN WE HELP OURSELVES TEACH BETTER?—A CASE STUDY OF SERIES OF TEACHING WORKSHOPS AT BITS, PILANI*

The author of the Case Study has himself labelled the tradition of not insisting on a qualification or training in Methods of Teaching for a university faculty member, as an unfortunate tradition in the universities all over the world and particularly in India. It should be considered most fortunate that such a forthright statement has come from a reputed member of teaching profession belonging to a highly esteemed discipline of Mathematics. One, who has been in the business of preparing teachers for more than fourteen years, is not impressed by 'what (content)' of the article. All the same, he cannot but appreciate the "how (process)" which has been discussed threadbare in the article. It is certainly heartening for the teacher educator of this country to note that, for years, what he has been advising to his counterparts in the colleges and universities about the methods of teaching has been very forcefully and convincingly advocated by a person like Prof. Krishnamurthy. It will not be out of place to draw attention of our learned colleagues engaged in teaching in colleges and universities, that document entitled "Teacher Education Curriculum—A Framework" brought out by the National Council of Teacher Education has not only recommended flexible curricula for imparting training to the college/university teacher but also has spelt out in great details task/performance related intellectual, manipulative (psychomotor) and human relational skills, most of which are similar, if not the same, reported as salient points of teaching methodology by the worthy author. The appearance of this case study and hence the plea in it, is an answer to many critics who puh-puh the idea of imparting training to the college/university teacher, even declaring that the B.Ed. is of no use to the teacher in making. Quite contrary to the belief held by such critics, the case study convincingly establishes the validity of the two major points: (1) The college/university teacher needs training in methods of teaching as much as does a pre-primary/primary/secondary teacher and (2) It is certainly possible to help him improve his modes and techniques of teaching.

As mentioned above, the contribution of the article is not its content, but the light it has thrown on the process of convincing (neither educating nor training) the colleagues in the institution about the need of using appropriate instructional strategies in the classroom teaching. It would rather be naive for any one—may be he a discipline expert or education expert to believe that the salient points such as 'write legibly', 'write with force, always bold and thick', 'divide your blackboard space into several points', 'don't crowd in writing or in drawing, individually or together', 'think of other props, such as prepared models or projections from an overhead projector', 'articulate your words....clearly and distinctly', 'regulate your fast speaking by more intensive articulation', 'adopt a natural conversational style...rather than the style of plateform speech', 'avoid jarring use of the mannerism such as O.K., say...etc.,' 'talk loud and clear', 'a summary at the end of each topic is worthwhile', 'adopt a posture which is not static', 'link our current lecture with the past and the future lectures,' 'be aware of the academic background of your class. Take this into account even while planning your lecture', 'keep the audience alert by having dialogues with them', 'avoid unnecessary repetition', 'one method of keeping the students alert is to ask questions and involve them in what is going on' etc.—to quote a few stated under (1) Visual Communication and Blackboard Presentation

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*Comment on V. Krishnamurthy's article, published in the *J.H.E.*, Vol. 3, pp. 149-164 (1977-78).

Techniques, (2) Oral Communication and Presentation Techniques and (3) Awareness about the Audience, present any thing new or different from what is preached under any teacher training programme. However, this concensus was arrived at by a painful process of five mild and three intensive attempts (sessions) of 121 hours, a duration of time required for obtaining 9 credits or equivalent to a block internship of 24 days, if a trainee is required to work for full five hours a day. One cannot help observing that there appears to be a large number of core elements/skills/time which may be common to teacher training, irrespective of levels for which it is imparted. In fact, it seems to indicate that B.Ed. trainees do not seem to be very effective because it has become ritualistic (fulfilling the requirement of delivering a certain number of lessons) rather than a check on accomplishing a particular task of skill, e.g., write legibly. The stark reality remains facing us that although the required number of lessons are completed, the trainee is not able to 'write legibility', 'articulate clearly or distinctly' or 'to adapt a posture which is not static'. The advocate of task-oriented training is overwhelmed by the achievement of BITS objectives. The case study has shown clearly that the problem is, one, that of overcoming the inhibition and resistance to change, using primarily the group dynamics of pressures and persuasions from peers, two, that of initiating a change in attitude, and three, that of mastering the essential skills of teaching through an interactive process of positive and negative verbal reinforcement. Doubtless, it has been a slow process, but the change has been sure.

Even after having reflected complimentarily, the commentator feels compelled to raise a few questions over here: Is it really necessary to go through such a lengthy process, when it is realized that a novice college teacher is not sufficiently equipped with the necessary teaching skills? Even if the high-brow content specialist is allergic to get a B.Ed. or a diploma in training from teacher training institutions, is it not possible to incorporate such courses in the M.Phil. programme, for, while every teacher might not do research, he is required to teach as long as he is in the college/university. The reality of the situation is that task-oriented training for every college/university teacher ought to be made part and parcel of M. Phil. programme, irrespective of the discipline to which he belongs. The second set of questions relate to the apathy of our counterparts to the literature, experience and research in the area produced by the Indian educational researcher. Why is it that the work, for example, on behavioural objectives, carried out in India, does not find its place even as a reference in the published article like this? Should they not profit from our experience? Should they not develop such programmes using the Indian experience and consulting those who have been doing valuable research work in the area. In the opinion of the reviewer, the myth of compartmentalizing training as pre-primary, primary, secondary, higher secondary or the collegiate level has been exploded by the list of skills reported in the case study. Why, then, can't all who are in the business of teaching come together to develop a variety of need-based training programmes as recommended in the document entitled 'Teacher Education Curriculum—A Framework'?

P.N. Dave

ACTIVITIES OF THE TECHNOLOGICAL FORECASTING AND RESEARCH MANAGEMENT CELL OF INDIAN INSTITUTE OF SCIENCE, BANGALORE

The general area of Futures Studies or Futurology is gradually becoming a formal academic discipline in several countries all over the world. The hope is that accurate and quantitative projection of futures will help in long term planning for a more desirable future. It is also felt that such future studies should be used in designing the present university curriculum since the students of today are being trained to serve a society until about thirty to forty years from now. It is necessary to expose them to the kinds of society and techno-economic systems that are likely to prevail in future if they are not to become outdated during their professional careers. Technology forecasting is that special area of Futures studies which deals with the prediction and assessment of future technologies. This communication describes our attempts in setting up a cell for research and training in Technological Forecasting and Research Management at the Indian Institute of Science in August 1972.

The activities of the group are being directed by Professor P.K. Rohatgi who has a joint appointment in the Departments of Mechanical Engineering, Metallurgy and Industrial Management of the Indian Institute of Science. Professor Rohatgi has also been serving the NCST futurology panel of the Government of India. A post-doctoral fellow Dr. B. Bowonder acted as a coordinator of the group from 1972 to 1975 and now Dr. Mrs. B. Nagaraj, another post-doctoral fellow is acting as the coordinator. In addition Dr. Mrs. Kalpana Rohatgi worked with the group and recently Dr. Miss. T.S. Chandra has joined the group. In addition, there are six project assistants and a post-doctoral fellow Dr. Srinivasa Udipi, in the group working on sponsored projects, and there are a few students who did their project work for Master's degree in this area.

Initially the group was helped by IISc funds in terms of post-doctoral fellowships and funds for library material. The IISc has at present one of the best libraries on TF, and R and D management. The group subsequently received a grant by the Jamshedji Tata Trust to conduct a project entitled 'Technological Forecasting for India in the year 2000 AD'.

The Tata Energy Research Institute, Bombay, has funded three projects undertaken by the group. These are: (i) Techno-economic feasibility studies on solar furnaces for metallurgical uses. (ii) Techno-economic study and substitution of steel and other heavy alloys in transportation equipment to conserve energy. (iii) Technological forecasting of energy systems for India until the year 2000 A.D.

Aims and Objectives of TF and R and D Management Cell at I.I.Sc.

The group began its activities mainly with the purpose of examining the applicability of technological forecasting to the Indian scene. Hence some of the primary objectives of the group are: (i) To identify future and likely technological imperatives for India. (ii) To recommend policies and outline steps that will make these imperative technologies available through goal oriented research and development activities. (iii) To publicize the findings of the group in the area of forecasting and thereby stimulate planners and fellow scientists to develop the right kind of technology for the progress of the country and removal of poverty.

Work Completed by the TF and R and D Management Cell to date

(i) The group has conducted Delphi and other extrapolative studies on future technologies in the areas of energy, food, steel and aluminium industries and health. A study in the area of technological forecasting for machine tools has also been completed for H.M.T. Ltd., Bangalore.

(ii) The cell has published over twenty five papers on TF and R and D management with special reference to India. A crisis analysis exercise for India until the year 2000 was conducted and included in the NCST monograph on futurology, and also abstracted in several newspapers. A book on 'Technological Forecasting with special reference to India' has been completed by some members of the group and has been accepted by Tata-McGraw Hill for publication in 1978.

(iii) The group offers a two credit course on Technological Forecasting and Research Management every year in the Department of Industrial Management which is taken by students from several disciplines.

(iv) Several speakers were invited from within India and also those visiting our country from abroad, to speak on the subject of future studies at seminars. Some of the speakers were themselves involved in forecasting activities while others were induced to forecasting in the areas of their own expertise. The seminars heldped the cell (and other listeners) in their learning activities in this new field at the Institute.

The group has attempted to extend its learning-teaching activities in TF to other institutions of higher education by conducting a workshop on futurology/technological forecasting, sponsored by the University Grants Commission and the Centre for Continuing Education, IISc., during February 1977. Several participants in the workshop were faculty members at various universities. The workshop was highlighted by a discussion on the recommendations to be made to the UGC on the education in futurology, by the participants of the workshop. There was an unanimous agreement by the participants that futurology is an important area of study to which all students from different disciplines should be exposed, at the graduate, post-graduate and doctoral levels in the higher education in India. The general recommendation was that 'Introduction to Futurology' can be taught as a core subject at the B.A./B.Sc. level in all universities followed by advanced courses at the post-graduate level tailored to suit the students' individual discipline. A similar system of a single general course in futurology can also be adopted in colleges, teaching engineering, management, medical, agricultural and other professional courses. After the introduction of a single general course in all universities and colleges, attempts should be made to develop a series of courses and research programmes leading to full fledged degrees and diplomas in futurology.

The staff involved in teaching futurology should be given training for about 3-6 months, by UGC or other bodies. It is desirable to establish a chair on futurology in all educational institutions to give the discipline the recognition required to have full-time staff members to teach the subject. Literature on the subject should be widely circulated to all institutions, and translations in regional languages made available wherever required. Provision should be made for visiting professors of futurology from India and abroad, who can be sent to various universities for starting the courses until such time that the indigenous staff of these universities can take over. Allotment of junior and senior research fellowships in futurology, schemes and teaching grants is very necessary to encourage students to take up studies in this discipline.

P.K. Rohatgi

A CAREER IN APPLIED SCIENTIFIC RESEARCH—A CASE STUDY OF ATTITUDES OF THE YOUNG

For the past many years, India and other developing countries are concerned about highly qualified men and women leaving the country and settling down in the more advanced countries. This is called the "Brain drain". Although we have been talking a good deal about this, we seem to have done very little to check this. The young people who leave India are for the most part doctors, scientists, engineers, architects, and teachers. The figures for such migrants are available, but I need not quote them here. The chief cause for this steady migration is rather simple to see. The more advanced countries offer them better work and better pay, and the poorer countries who have trained these people are not able to offer anything comparable.

As Director of Employment Exchanges in Tamilnadu, I had planned a series of Career Guidance Seminars for students. One such was a Career Guidance Seminar on Applied Scientific Research. The simple and clearly stated purpose of this Seminar was to give Career Guidance in Research to students studying either in the final year technical degree courses or those who were reading for a Post-graduate degree. The second purpose, which was not clearly stated when the invitations were issued, but made clear later, was to motivate these future scientists and technocrats to stay back in India and to work in the field of applied scientific research to help solve India's problems, within the framework of

Indian conditions. We invited sixtysix students belonging to various disciplines—Electrical, Aeronautical, Mechanical, Structural and Chemical Engineering, Electronics and Telecommunication Engineering, Geology, Metallurgy, Chemistry, and Nuclear Physics. They came from the Indian Institute of Technology, Madras and eight other colleges of Tamilnadu. In the selection of these students, we followed the same two broad criteria as for other seminars, namely good academic performance, and motivation. The technique of the Seminar was exactly the same as for other Seminars. Eight well-known scientists were nominated as the Leaders of the Seminar. They came from the Union Department of Science and Technology, the Central Electro Chemical Engineering Research Institute, Karaikudy, the Central Structural Engineering Research Institute, the Central Instrument Organisation, the Oil and Natural Gas Commission, the National Metallurgical Laboratory, and the Alagappa Chettiar College of Technology, Madras. The other organisations, the National Institute of Oceanography and the Hindustan Aeronautics Limited, had agreed to send their nominees, but could not do so. Since applied scientific research would be mostly relevant to modern industry, we organised the Seminar in collaboration with a leading firm manufacturing electrical equipment. The head of that organisation also participated as a Leader of the Seminar. Each Leader prepared a short speech indicating broadly the career opportunities in applied research which would be available in the field of his own specialisation. The head of the industrial concern, himself a metallurgist, spoke in general terms about the value of scientific research in modern times, and how research oriented industries select research personnel. Each such speech was circulated in advance to the sixty-six participating students. We made it clear that a bringing together of several such disciplines within the same Seminar was done with a two-fold purpose: to give a broad base to the proceedings, and to emphasize that motivation could be made sharper when different disciplines meet. This was quite clearly understood both by the Leaders and by the students, and was in fact appreciated on the ground that career guidance limited to a single discipline would probably have less practical value. Since the speech of each Leader of the Seminar was circulated in advance, the actual delivery of the speech was limited to about five minutes, and the remaining seven hours of the Seminar were devoted entirely to questions and answers from the students, suggestions, and intermittent discussion.

The questions which the students put, and some of the suggestions made by them, form the basis of my present study. I do not propose to deal with the answers given by the Leaders of the Seminar, except in one case discussed at the end.

Several students asked the question why an industry often paid more attractive salary to a technocrat who had taken in addition a degree in modern management. This question in different forms came from several students, and quite clearly showed that very many students knew of this. During the lunch hour I ascertained from some of them that they regarded a degree in Management as primarily as a status symbol and of little practical value.

The second set of questions showed the anxiety of some of these men about their future in India. When it was suggested that India could do certain kinds of research in the sophisticated field of aeronautical design and engineering, I could see that the students did not accept this answer as wholly correct. Almost every student knew someone who had settled down in an advanced country, and almost every student in this group of sixty-six had carefully thought of going abroad. Some were, however, aware that settling abroad was not as easy as it was a few years ago, and this anxiety was clear in the questions which they asked. A few questions could serve as good samples. "Can we go abroad for a few years for higher study or research and then come back to India and fit into Indian conditions?"; "Is it true that the Government prefer those who hold degrees from well-known Universities abroad?"; "Is it true that a research worker in a Government organisation is burdened with a good deal of administrative work?"; "Is it true that an engineer in India could never hope to do original or creative work because much of his time will be taken up by administrative routine?"; "In every Engineering College, there is a Placement Cell to help fresh graduates to find jobs. Can't we start a similar cell to help those who are returning from abroad?"; "Are there opportunities in India for research and development in Nuclear power technology and tidal power technology?". "I feel that I could invent a new kind of combuston engine; can any institution finance me to develop a prototype?" "Is there any future for technical consultancy in India?"; "Is it possible for people like us to help in rural development?"; "Is there any scope for research in environmental engineering and pollution control in India?"; "With an M.Sc. in Physics, can I help in research in Metallurgy?".

Some questions showed anger, probably justified.

"How can bureaucratic red tape be kept out of research organisations to allow scientists to function creatively?"; "Why does industry in India spend so little on Research and Development?"; "Is research properly directed in our Universities?"; "Why does not modern industry be more practical and realise that talent in research cannot be proved by obtaining a high class in the final examination?"; "We often receive homilies that we should continue to work in India, but many of our elders live comfortably abroad. Can we ask them to come back?".

Some questions were very perceptive, indeed. A sample—"If an industry asks a research worker to sacrifice his own interest and take to a different kind of research, is it possible for that research worker to function?"; "Some of India's problems are such that they could be solved by simple applied research in simple and inexpensive laboratories. Do you agree?" "If an industry refers a research problem to a college, will it not help the students a great deal?"; "If a bright structural engineer is prepared to work in the field of low cost housing, will the Government appreciate it?"; "Do projects like the Ganga-Cauvery link or laying an underground railway require a lot of research?" "Prospects of a Geothermal engineer in India?".

Conclusions

The above questions are a few out of the many, but the conclusions I draw are these. The young who are going to take higher degrees in science or technology are acutely aware that probably advanced countries will offer them a lot more scope for earning and personal advancement. A few are certainly aware that now it is more difficult to settle abroad than was the case until recently. Most young people are, in a vague way, idealists, and so were these students whom I met, but very few clearly perceived that without science and technology we cannot hope to put new life into the poverty-striken rural India. Many students did not know all the research institutes in their field working in India. Some of the students doing structural engineering were probably not aware that off-shore drilling posed stupendous technical problems, and required an unprecedented degree of team work and technical coordination among the various scientists and technologists. Those who are hoping to make a career in India would probably prefer to work for industries which pay more, but they seem to know that it might be worthwhile having a degree in management because that ensures advancement. Most students are not aware that technical libraries in India or abroad could give them the complete results of published research so far on a particular problem. Some of them seem to know that research in a Government organisation could be frustrated by ignorant interference from outside. Most of these young technocrats are not aware that research done in a laboratory under controlled conditions would be accepted only if it is shown to work in the field. Very few students regularly read journals devoted to research in their own field of interest. They are not particularly attracted to the teaching profession, but consultancy has a certain inexplicable charm. Most students admitted (and I believe them) that given a decent opportunity in India, they would stay back. This is, indeed, a very encouraging sign. Most students are not aware that transfer of technology involves not merely the blue-prints and the knowhow, but the receptivity of the country, the economic need, and cultural factors. A surprisingly large number of students are aware that India could help some other less developed nations in science and technology.

I will conclude this article by discusing very briefly an interesting offshoot of this Seminar. The eminent educationist who inaugurated the Seminar thought that a post-graduate degree was a pre-requisite for research. Later in answer to a question, a very different view was expressed by another leader of this Seminar who put it thus "It does not matter whether you have a B.Sc. or a D.Sc. What matters really is your motivation and talent for research, your ability for sustained hard work, and your perception about the value of certain kinds of research".

D.K. Oza

STUDY AND PRACTICE OF ENGINEERING IN IRAN

In recent years there has been an increasing amount of contact between the Indian and Iranian organisations. A large number of Indian engineers, doctors and university teachers are employed in Iran. The number of Indian business houses in Iran has been steadily increasing. There are a considerable number of Iranian students studying at various Indian universities. The exchange of ministerial level visits between the two countries has now become more frequent than ever. The biggest trade agreement so far was signed in August 1974 in Tehran. Under the terms of the agreement India is to deliver to Iran large quantities of cement, sugar and rail in exchange for Iranian chemicals, petrochemicals and fertilisers.

It may be of interest to mention here that Iran covers an area of 1.645 million square kilometers and has a population of about 34 millions. The area covered by India is almost just double (3.280 million square kilometres) and her population about 18 times (617 million) as much. The present per capita income of Iran is about 68000 Rials per annum against the per capita income of about 8000 Rials per annum of India. 77 per cent of the Iranian population is illiterate as against 66 per cent of the Indian population. During 1971 out of a total working population of 7.2 millions in Iran, about 3.4 millions (48 per cent) were employed in agriculture. During the same year out of a total working population of 180 millions in India, nearly 130 millions (72 per cent) were employed in agriculture. One out of 80 Iranians drives his own car whereas one out of 900 Indians drives his own car. Petrol costs 6 Rials a litre in Iran.

Not all children of school going age in Iran get an opportunity to go to schools. In 1973-74, 80 per cent of the children in the school going age (6 years to 18 years) in urban areas and 40 per cent of the children in rural areas went to school. The school education lasts 12 years out of which the studies for nine years are common. The last three years cover specialised groups, like science (mathematics or biology), arts, etc. At the end of the twelve years the children get a school leaving certificate.

Those children, who wish to learn a vocational trade, pass on to a vocational training school after having completed nine years of school education. The vocational school courses, for example, for mechanic, electrician, draughtsman, etc., have a duration of three years.

Polytechnic Education

The polytechnic education in Iran is rather different. The courses which may lead to a diploma in civil, electrical, or mechanical engineering, for example, last two years. However, for admission the candidates must have a school leaving certificate in science (mathematics) group. Thus the total period of studies amounts to 12+2=14 years. In special cases vocational trade certificate holders can also be admitted to a polytechnic.

In Iran the word "Danishgah" is used for a university. "Danishkadeh" is the word used for (i) a faculty or a constituent college of a university, (ii) an affiliated college, and (iii) an independent college with the right to self-government in all academic matters and with the right of awarding degrees (like the Indian Institutes of Technology). Subsequently the term "universities" would be often used for all the institutions of higher education.

The higher education is quite restricted in Iran. Only about 10 per cent of the school leaving certificate holders get a chance for higher education. During the year 1973-74 the total number of students in Iran was 123,000 (about 70 per cent boys and the rest girls).

About 40 per cent of these students were studying at the universities and the remaining in affiliated and independent colleges. The number of foreign students studying in Iran is almost negligible. The oldest and the largest university of Iran is the Tehran University which was established in 1934. In October 1975 it had about 20,000 students and 1450 teachers and its budget for the year 1975-76 (21 March 1975 to 20 March 1976) amounted to 5600 million Rials.

The first degree or the bachelor's degree usually takes four years in all subjects, for example, in physics, geology, history, philosophy, any language, mechanical engineering, agriculture, library science, education, law, or nursing, etc. However, medicine is an exception. The master's degree takes one and a half to two years. The master's degree courses in engineering are wide spread in Iran and most of the universities run such courses. The impact of the American system of higher education is quite pronounced in Iranian universities. The facilities for working towards a doctoral degree in any field of engineering are very much limited in Iran.

Certain universities run special bachelor's degree courses in engineering lasting three years for polytechnic diploma holders.

Free Education

The education in Iran is almost entirely free. No fee is paid by the students at any level. There are government subsidised shops for the students in schools, polytechnics and universities, from where they can buy books, stationary, instrument boxes, slide rules and calculating machines, etc. at extraordinarily cheap rates. During the first six years of school education free refreshments consisting of milk, bread and fresh fruits are provided once every day to all students in the school.

The medium of instruction at all levels of education is Persian barring a few rare exceptions. However, every student is taught English from the seventh school year. Thus the students preparing for a school leaving certificate must study English for six years. Since not many books are available for university students in Persian, specially in professional courses, like engineering and medicine, it is a practice at all the institutions to supply bound photocopied or cyclostyled volumes in Persian, known as "polycopy", of all lecture manuscripts at a token cost of 5 Rials per course or free of cost. These lecture manuscripts are prepared by the teachers concerned. This appears to be a great barrier and many students have their knowledge limited to "polycopies" as most of the books available, specially in professional courses, are in English.

All students at polytechnics and universities get financial assistance enough to support their living expenses. The amount is usually 5500 Rials per month or more for each student, living independently in a hostel or a private room. For students residing with their parents the amount is 3000 Rials or more. Lunch and dinner is provided to the students at subsidised rates in the self-service dining halls of the institutions.

The Government of Iran spent 503,500 Rials, 265,000 Rials, 150,000 Rials, 100,000 Rials and 70,000 Rials per student during the year 1973-74 in the areas of medicine, agriculture, engineering, natural sciences and arts respectively.

The Iranian Government offers generous scholarships for higher studies abroad in various areas of studies for all those who have successfully completed a bachelor's or a master's degree in Iran. However, they have to sign an undertaking with their Government to the effect that after completing the proposed course of studies abroad they will serve in Iran for double the period spent abroad. The scholarships fully cover the travel expenses, tuition and living costs, expenditure for purchasing books and publishing theses. During the year 1972-73 the number of Iranian students abroad was about 18,000. Out of this 42 per cent were studying in the U.S.A., 24 per cent in West Germany, 10 per cent in England and the remaining in other countries.

Departments

The various academic positions at Iranian universities are "Murabbi" or instructor, "Ustadyar" or assistant professor, "Danishyar" or associate professor and "Ustad" or professor. The English translation in Iran have been taken over from the American pattern. For most of the Indian universities the corresponding designations may be written as demonstrator or assistant/associate lecturer, lecturer, reader and professor. For the Indian Institutes of Technology the corresponding four designations are associate lecturer, lecturer, assistant professor and professor. The academic staff members at the Iranian universities are civil servants of the Government of Iran.

According to the existing regulations the minimum qualification required for the post of an instructor is a master's degree in the subject concerned. Only few fresh master's degree holders, who have been outstanding students, get the post. The professors usually have an eye upon the best students and they are appointed instructors in respective departments. The monthly salary of an instructor at entry (usual minimum age 18+4+2=24 years) is about 65,000 Rials. Generally speaking the job of an instructor is to help the students in tutorial and laboratory work. However, when there is a shortage of teachers, an instructor may be asked to take theory classes.

The minimum qualification required for the post of an assistant professor is a doctoral degree. The starting monthly salary is about 85,000 Rials. The candidates for the post of an associate professor must have a doctoral degree, at least four years of teaching experience and some published work to their credit. The minimum salary is about 115,000 Rials per month. The achievements required for appointment to the post of a professor are a doctoral degree, at least nine years of teaching experience and substantial published work. The starting monthly salary is about 135,000 Rials.

The usual maximum salaries of the university teachers are around 1.2 to 1.3 times the starting emoluments. In exceptional cases the professors earn around 200,000 Rials or more. In general the engineering teachers in Iran, specially upto the rank of associate professors; earn a good amount of extra money by lecturing in the evening colleges, polytechnics, vocational schools and factories (for their apprentices) on a part time basis.

More than 65 per cent of the engineering teachers at Iranian universities hold doctoral degrees. In certain universities and independent colleges the percentages is even higher than 90 per cent.

To give an idea of the size of a university department it may be said that it usually consists of about 10 to 30 academic staff members. The head looks after the department, the dean heads the faculty and the chancellor (in our country he would be called a vice-chancellor) heads the university. The dean is often assisted by one or more vice-deans and the chancellor by one or more vice-chancellors (in our country they would be called pro-vice-chancellors). The chancellor is a full time administrator and his usual monthly salary is around 250,000 Rials or higher. The vice-chancellors, deans, vice-deans and heads are usually full time professors (or at times associate professors) appointed to the administrative positions for two to three years. Besides their normal salaries they draw monthly allowances usually at the rate of 30,000, 30,000, 20,000 and 15,000 Rials respectively. The position of registrar is unknown at the Iranian universities. There are, however, permanent administrative officers employed in the chancellor's office.

The benefits pertaining to study and sabbatical leave are quite generous. Every academic staff member gets study leave on full salary with increment for the entire duration of the course, which is usually a doctoral degree, even if he gets a scholarship for the studies. However, usually three years of service are necessary before one is entitled to get study leave. In certain cases instructors are appointed with the condition that they work for one year and then proceed on study leave. An academic staff member is entitled to one year of sabbatical leave after every four years of service at the university. In each case the Iranians usually go to a university in a developed country. During the sabbatical leave they pursue research and/or teaching work and earn full salary with increments even if they are paid by the university where they spend the sabbatical leave.

Position in Industries

Before coming to the technicians in the industry, it may be of interest to know briefly about the industries in Iran. The largest industry of Iran is the oil industry. Iran is one of the four leading producers of oil in the world. The oil production of the four leading countries, namely the U.S.S.R., the U.S.A., Saudi Arabia and Iran amounted to 9.011, 8.995, 8.336 and 6.131 million barrels (1 barrel = 159 litres) per day respectively during the year 1974. The National Iranian Oil Company achieved greater control of the Iranian oil industry in the middle of 1973 and Iran has been benefitted enormously from the progressively increasing oil production during the past years and from the increased oil prices, which the oil producing countries have been obtaining since late 1973. During the years 1973-74 (21 March 1973 to 20 March 1974), 1974-75 and 1975-76 the Government of Iran earned 309.1 billion Rials (58 per cent of the total revenue). 1142.9 billion Rials (85 per cent of the total revenue) and 1472.7 billion Rials (83 per cent of the total revenue) respectively in oil revenues. This constant increase in the oil revenue has changed Iran from an aid receiving country to an aid giving country. The per capita income rose by 600 per cent during the decade March 1965 to March 1975. Iran has been giving loans to the U.K., France, India, Egypt, Morocco and Senegal, besides other countries. During 1974 Iran gave an aid of 190 billion Rials to the other developing countries. Rial has become a hard currency and any currency may be bought through it.

A large deposit of copper was discovered in south-eastern Iran in 1967 and smelting is due to begin by 1977. This is expected to further boost the Iranian national income.

The principal export products excluding oil are raw cotton, carpets, fruits, hides, mineral ores, oil-bearing seeds and wool. Of the total income from exports (excluding oil) during the year 1973-74, raw cotton contributed about 35 per cent, carpets about 25 per cent and fruits about 22 per cent. The principal buyers of the export products (excluding oil) are West Germany, the U.S.S.R., the U.S.A., Japan, the U.K., France, Italy, Czechoslovakia and India. During 1973-74 about two-thirds of the products were bought by West Germany, the U.S.S.R. and the U.S.A. together. Other items which are produced mostly for use within Iran include sugar, tea, alchoholic and non-alcoholic beverages, cigarettes, textiles, paper, pharmaceuticals, cement, steel, machine tools, refrigerators, air conditioners, washing machines, gas ranges, televisions, buses, cars and tractors.

An unskilled worker in Iran earns between 5000 to 7000 Rials per month. The monthly earnings of a semi-skilled worker lie between 7000 to 10,000 Rials. A skilled worker or a draughtsman earns between 15,000 to 25,000 Rials per month. The monthly salary of a foreman ranges between 20,000 to 30,000 Rials.

An engineering diploma holder usually gets a starting salary of about 20,000 Rials per month in the industry. After about three to five years of experience he may earn about 35,000 Rials. The starting monthly salary of a graduate engineer is about 45,000 Rials. He may expect to earn around 75,000 Rials after three years of industrial experience and about 90,000 Rials after five to six years of experience. An engineer with a master's degree usually gets a starting salary of about 60,000 Rials per monh. After about three years of experience he may get 85,000 Rials and about 100,000 Rials after five to six years of experience. An engineer with a doctoral degree may get a starting salary of about 90,000 Rials per month. He may earn about 110,000 Rials after about three years of professional experience. The average maximum salary of an engineer who does not hold a managerial position is seldom above 130,000 to 150,000 Rials per month. The usual monthly salary of managers and directors lies between 120,000 and 200,000 Rials. In exceptional cases the earnings are much higher.

Besides the salary the people working in the industrial enterprises usually get bonus. The gain often amounts to about a month's salary. On the other hand the deductions from the salary on account of income tax, pension and health insurance are quite substantial for the employees of the industry compared to the deductions for the government servants (university teachers included). For the same salary the government servants pay about 50 per cent of the income tax paid by the people employed in the industry and other non-government organisations. However, it could be said without reservation that the people earn substantially more than their counterparts in the government employment specially during the first ten to twelve years of service, during which the salary rises in the industry are quite fast.

It may be of interest to mention here that the salaries in Iran have been going up at a very fast rate during the past years. During the last five years the salaries of the engineers working in the academic institutions and in the industry have almost doubled. Their present salaries in Iran are higher than or at least equal to the corresponding salaries any where in Western or Northern Europe. The effective difference becomes larger when one considers that the cost of living and taxation is substantially less in Iran compared to the countries in Western or Northern Europe. It may be of interest to mention here that the per capita income of these countries is about 4 to 5 times as high as that of Iran.

The usual age of retirement everywhere is 60 years. Where necessary, this may be extended to a maximum of 65 years. After 30 years of service one is entitled to the full pension which is equal to the basic salary at the time of retirement. It may be mentioned here that the existing basic salaries at the universities and in the industry are roughly around 40 per cent of the salaries mentioned earlier. For those who put in less than 30 years of service before retirement, the amount of pension is proportionately less.

The working time for the employees in the universities and other public offices is about 40 hours per week. The usual teaching load for university teachers is 12 effective academic hours (50 minutes) per week. One hour of lecture work or two hours of tutorial, laboratory or project work are counted as one effective hour. Most of the teaching load of the senior teachers generally consists of lecture work. In the industry the working time varies between 45 to 48 hours per week. Every where Friday is a full holiday. Most universities and industrial enterprises work for half the day on Thursdays. However, some have Thursday also a full holiday. The other holidays are very limited every where and seldom amount to more than 25 days in the universities and 15 days in the industry during a year. The university teachers get one month of privilege leave per year, which they are normally expected to take during the summer vacations. There is no summer vacation or winter break for the teachers. Every teacher remains in the campus during the working hours although it is definitely not so strict as in the industry. In the industry workers get about 15 days of privilege leave per year and others 24 days to one month. Every where employees get 24 days to one month of medical leave on full pay during a year.

The number of peons and domestic servants is proportionately quite less in Iran compared to India. The average monthly salary of an office peon lies between 7000 and 9000 Rials. A domestic servant earns around 6000 Rials per month. Because of the rapidly improving standard of living the subordination for the office peons is almost entirely limited to official matters. Furthermore, the availability of domestic servants has become difficult. As a result in Iran even the managers and directors in the industry, professors and senior officials in the public administration have mostly one domestic servant, usually a woman. Modern household facilities like cooking ranges, suction cleaners and cloth and dish washing machines have become quite common in the urban areas.

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S.H. Mohsin

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Book Reviews

Soviet Education: Theory and Practice by Jaweed Ashraf, Sterling Publishers, New Delhi, Pp. 200. Rs. 45.

This book, written in a lucid style, is perhaps the first of its kind to be published in India giving such detailed information about the Soviet educational theory and principles.

In the first two chapters the author has discussed at great length the Marxian theory of Knowledge which can be understood in relation to four major concepts. (i) The material world is primary in relation to consciousness and is an object of cognition independent of man; (ii) Dialectical materialism asserts that the world is knowable and no unknowable thing exists; (iii) The objective reality is not only material and knowable but is also verifiable and hence this concept has a great significance for education. Verification of truth is a basic feature of scientific knowledge. Education is to generate and disseminate knowledge; (iv) Marxist theory of knowledge does not consider abstract systems and models. Theory and practice have to be combined into an integrated whole. In fact, social practice is a fundamental concept in the Marxist theory of knowledge.

The detail implication of Marxist theory of knowledge for the development of socialist educational system is considered in some detail—

(a) class nature of education is basic to Marxist approach. (b) knowledge is gained through interaction with the world outside and "sensual approach" to work is basic to all learning. (c) knowledge is a process and formal education forms only a part of the system for acquiring the knowledge. (d) the development of the Society as well as the development of knowledge are processes and hence the socialist educational system should be flexible enough to serve both the purposes. (e) since knowledge becomes knowledge only after it has been verified in social practice, the socialist system of education should abolish the distinction between theory per se and practice per se. Where duality ends the socialist epistemological concept of praxis begins. In education the entire nature of polytechnical education, open system of its organisational structure etc. derive themselves from the basic ideas of Marxist epistemology.

While the above account is quite useful, it would have been better if the author had gone into some more depth on the analysis of the works of great authorities on education such as Makarenko, Ushinsky and others. They are significant particularly because they relate to character education. Discussion on the works of Lunacharsky, and Krupskaya are also rather inadequate.

In the next 5 chapters, the author has dealt with principles of Soviet educational system, structure and organisation of education right from pre-school upbringing upto higher education. Commenting on the educational system in pre-revolutionary period, the author observes that Tsarist feudalism was controlling directly and indirectly the entire educational apparatus and its content. Education was a prerogative of the haves. High cost of education, teaching in foreign languages (German or French), different categories of school having different standards, linkage of church with the state and compulsory religious education were the main elements of education. The toiling masses, peasants and workers were deprived of education in the old system.

On the other hand, the Bolsheviks recognised the need of society's control on education and sought to alter the character of education to build a classless and progressive society.

The basic principles of the Soviet educational system as laid down by Lenin and other founders of the new society were—linking education with society; recognising education as a life-long process and formal education being only a part of it; delinking education from the Church and making institutions co-educational and providing education in mother-tongue at all stages.

According to the author, the main emphasis of the new system of education was on uniformity in structure and course content irtespective of the differences in the economic, cultural and other aspects of regional development. The first educational law of the USSR concerning basic education passed in 1958 consolidated in legal form the decrees and directives passed since the October Revolution. Right to education is a fundamental right of every citizen. Education was given a status it had never received in earlier societies.

According to the author, while schools are engaged in information transfer, mass organisations such as Komsomol, Pioneer organisations, and Trade Unions take up the task of upbringing of children.

Ministries exercise their administrative control over educational institutions. People's control on educational institutions is exercised through a hierarchy of committees. For People's control, an institution that has legal and statutory status in the USSR. Technical institutes and academic bodies are associated in matters concerning curricula etc.

The organisation of educational system is commendable since there is rational interlinking from the lowest to the highest state. Creches and Kinder-gartens with ideal environment provide excellent opportunity for the physical, cultural and mental development of the child under trained teachers. General education starting from the age of 7 is compulsory upto 10th standard as per 1977 Constitution. Technical bias in education increases at the higher standards of secondary education.

About the varied functions that the Soviet school performs, the author rightly observes that it harmoniously combines elements that are mutually exclusive in bourgeois education: Science with fine arts, mental labour with physical labour, work experience with philosophy and aesthetics with down to earth approach.

The Soviet experience of polytechnical schools is of great relevance to developing countries like India. In contrast to General Secondary education, polytechnics prepare cadres for a wide range of jobs in Soviet industries, agriculture, construction, transport and so on. The author has explained how big industrial and agricultural establishments "adopt" schools whereby they not only under-write heavy expenditure but also supply latest machines and equipments so that the students of the polytechnics are well acquainted with latest technology and equipments. Another recent development in this field is the concept of "Inter-school Production-Pedagogical combine" introduced since 1975. In view of the high cost of equipment, industries in a given region or a large city pool resources and provide the diversity of professions under one roof where students from different polytechnic schools come for work experience.

Administration of higher education which is organised by Universities and institutes is carried out by various bodies—ministry of higher education, ministry of middle specialised education, concerned ministries such as food, transport, etc. and also Academies. Despite this diversity, the author says, standard of education is uniform thanks to the co-ordination and supervision of course contents by high powered committees set up by the Academy of Sciences of the USSR. The teaching cadre periodically shift their emphasis from research to teaching and vice versa which brings great advantages to both fields. The division between natural and social sciences is diluted to a considerable extent by introducing relevant course subjects. Though lectures and seminars play a dominant part, from 3rd year of higher education, students are assigned problem oriented research work culminating in writing of diploma works in the last year to be evaluated by competent scientists as part of overall performance. Examinations in general are oral and evaluation is made on 5-point scale.

Soviet education is a product of earlier traditions of Russia which was influenced by Western Europe and socialist ideals of building a new society. The writings of Lenin, Lunacharsky, Krupskaya and other eminent education experts have contributed significantly to the present framework of education. The degree "Candidate of Science" is equivalent to Ph.D. degree in our country. The research course for getting this degree is known as aspirantura and there is great flexibility in the choice of field of study. Students need not stick to the discipline field of their graduate training. This helps more inter-disciplinary approach in solving actual problems of the country. The research students will have to pass what is known as 'candidate minimum' before actually working on their research topic. Students can take up this course through correspondence as in the case of other lower degrees.

The Academy of Pedagogical Sciences encourages research in methodology of teaching, evaluation and general upbringing of children. The author has elaborated the role of the Communist Party of the Soviet Union in the organisation of the education-culture complex in the country particularly since the 70's.

The standard of education at school level as well as at higher levels is not uniform throughout the Soviet Union. This aspect is very much worrying the Soviet authorities. But the author seems to give an impression that the standard of education is uniform throughout the country. Similarly, the contention of the author that each of the universities is headed by an academician or a person of equal eminence is rather questionable because there are many universities particularly in relatively less developed areas which are headed by Dotsents, who is less than a Professor. This was particularly evident in the Conference of the Heads of the Universities held sometime back.

The author gives exhaustive information about the policy resolutions of the Soviet state and CPSU on matters relating to education. While this is useful in itself, various modifications take place in the application of these resolutions into reality, which are equally important for our understanding. But this aspect is not considered important by the author. Moreover, the Soviet education has been facing different set of problems from time to time, which should be of great interest for any student of Soviet society. For instance, at present there is considerable debate in the Soviet Union on matters relating to specialisation vs general education in the field of higher education. Even in technical education, in the past, students were trained for a specific job in a specific field. As a result of advancement in science and technology, Soviet manpower planning experts feel that less time will be required for shifting technical hands from one job to another if they are trained on broadbased technical field.

One feels that the author is carried at times by emotions which has made him less analytical. Similarly, the author has hardly consulted the writings of western scholars on soviet education such as Nigel Grant, Bereday, Brickman etc. He has also not taken note of many books and articles by Soviet education experts in which the contemporary developments in education are fairly well analysed. Above all, the author has virtually bypassed the crucial period of Stalin and Khruschev during which the present edifice of Soviet educational system was built and developed. While a passing reference is made of 1958 Educational Law (in fact it deserved far greater attention), no credit is given to Khruschev for reforms in education and what is strange, even his name is not mentioned. For developing countries such as India, it is necessary to have an objective study of the Soviet approaches and methods for the solution of problems of illiteracy and shortage of technical cadre and also for bringing about close link between education and production.

Despite these, the book should be of considerable interest to the teachers and students of education as a whole.

R.G. Gidadhubli

University Costs and Outputs by Donald Verry and Bleddyn Pryce Davies, Studies on Education, Volume 6 (Elsevier Scientific Publishing Company Inc., Amsterdam-Oxford-New York, 1978) Cloth, Pp. xi + 244.

Material and immaterial resources go to education; the educational process takes place; and education yields some output. So educational system can be treated as an industry or a group of industries in economic sense, producing manpower with a range of skills, young people as the 'intermediate products' moving from one part of the educational system to another, and rest of the country outside the educational system can be called the final recipient of the products of this industry. So as we speak of costs, outputs, resource allocation, productivity, efficiency, leakages, etc. in other investment sectors of the economy, we can also meaningfully speak of the same in educational industry. These economic aspects of investment in education are of serious concern because apart from the fact that increasingly larger amount of resources of the economy (as high as 3 to 10 per cent of the GNP of various countries) having been poured into this sector—both from public and private sources, educational industry is a peculiar one compared to other industries. Education is both a consumption activity as well as an investment activity. When we consider education as a consumer activity it becomes something on which we should save, since savings are necessary for further investment and they are obtained by economising on consumption. But when education is treated as an investment it becomes something not to be economised but to be emphasised. We seek to expand investment, and so we seek more educational investments.

Secondly, education is a sector where the externalities are larger than the main product. Further the gestation period in this industry is too long, longer than many other types of capital formation. At the same time the benefits of education also flow over a very long period—for almost the full life span of an individual and in many cases even after—in the form of intergenerational spill-over benefits of education.

Thus for a variety of reasons, education forms a peculiar industry; at the same time, beyond doubt it is an industry. So a study of outputs and inputs in education is of particular importance and interest.

University costs and outputs, one of the series of studies on education from the London School of Economics Centre for the Economics of Education, formerly known as the Higher Education Research Unit is concerned with the problems of internal efficiency of higher education and the cost of providing educated manpower in the labour force. Using cross-sectional cost-functions for British Universities, the authors throw light on three important questions:

1. What is the optimal size of a University/University Teaching Department?
2. What are the marginal costs of educating more undergraduates and post-graduates? and
3. Should there be "joint-supply" of undergraduate teaching, post-graduate teaching and research facilities by the same institution?

The Book consists of eight chapters apart from Foreword and Preface both by Sir Claus A. Moser, and other technical paraphernalia like bibliography, index etc.

In Chapter 1 the problem is introduced. Chapter 2 is devoted to an excellent discussion of the theoretical problems involved in the measurement of university inputs and outputs. The econometric model which specifies cost functions (relating costs to outputs), and production functions (relating outputs to inputs) is presented in Chapter 3. Chapter 4 is concerned with the data base of the study—sources of data, population and sample sizes and a statistical description of the magnitudes and distributions of the main variables used in the study. Answers to the main questions are attempted in Chapters 5 and 6—the question of optimal size of a University and University teaching department, and the question of marginal costs, average costs etc., in Chapter 5; and the issue of "joint-supply" in Chapter 6. Use of time by the academic staff is considered as an important variable and accordingly the cost relations have been directly estimated in Chapter 7. The last chapter (Chapter 8) consists of summary findings and a few important concluding remarks.

University costs and outputs is a significant study. This econometric work pioneers a number of new approaches to the problems of effectiveness of investment resources in higher education. It will be of great use and interest to all those interested in the efficiency of educational industry.

Jandhyala B. G. Tilak

Economics of University Finances—Basic Principles and Practice by P.R. Panchmukhi, Centre for Multi-Disciplinary Research, Karnatak Historical Research Society, Dharwar, 1977, Pp. 245. Rs. 22.

This book is one of the series of studies sponsored by the ICSSR about the problems of university finances. The study mainly relates to the finances of Bombay University. The author has, however, attempted to develop theoretical generalisation about the major sources of finances for the university, i.e., donations, fees, and government grants. An attempt has also been made to analyse the principles of resource-use in the Bombay University and its financial soundness.

The book has been divided into three parts consisting of 13 chapters. In the first part, the basic issues of raising resources have been discussed; the second part deals with the principles of resource use by the university and the third part discusses the principles of financial soundness of the university.

About the basic issues of raising resources, the author makes a critical analysis of the contribution made by endowments, fees and state grants. According to the analysis made by him, though there is a large and growing number of endowments for the University of Bombay, the amount of unused balances of the interest income is also substantially high, indicating that significant amount of resources remain idle with the university for one reason or the other. He has, therefore, suggested that instead of making financial investments of the unused balances to swell the corpus of the existing endowment, the university should use these funds to make investments in education in the various development programmes. In this context, the author has suggested that there should be no unnecessary restriction on the university to invest the educational resources in Government securities only which carry low interest rates.

The author has made a very interesting analysis of the fee contribution to the university finances. He has sought to examine the principles of determination of fees in the universities. A significant point emerging out of the analysis is the quite substantial amount of subsidies that the students get on account of lower fees at the Bombay University. For example, in the department of economics, the expenditure on teaching and research per student is Rs. 1902, while the tuition income per student is hardly Rs. 228, constituting a subsidy of Rs. 1674. In the department of chemical technology, the element of subsidy is about Rs. 2500. The highest amount of subsidy goes to Marathi and the lowest to History. The author has, therefore, suggested a substantial rise in fee rates for post-graduate education to be supplemented by a liberal scholarship programme to the really underprivileged students.

It is difficult to disagree, on a theoretical plane, to the conclusions drawn by the author. The present fee structure, involving a substantial amount of subsidy, which is given indiscriminately to the privileged and the underprivileged is, to say the least, inequitable. The problem is, however, of the consequences—academic, social and political—that a steep rise in fees is likely to cause. Unless an integrated scheme of scholarships on a fairly liberal scale is operated, the raising of fees might prove to be still more inequitable. The political consequences of such a step and the likelihood of its sparking-off student agitations are also to be considered.

The author has discussed the system of grant-in-aid from the point of view of the three basic objectives: supplementation of the financial effort of the university for providing for certain higher education programmes; stimulation of the financial effort by the university and equalisation of financial capabilities of different universities in providing for higher education programmes. In this context, he discusses the merits of general vs. specific grants; matching vs. deficit grants, etc. In the case of Bombay University, he comes to the conclusion that the system of state grants appears to be characterised by complexity and ad hocism. He has also referred to the irrational distribution of responsibility between the UGC and the State Governments. The author's conclusion about the ad hocism of state grants is amply borne out by the analysis of state grant-in-aid rules and the quantum of release of grant made by the present reviewer. (*Financing of Higher Education in India,* Sterling Publishers, New Delhi, 1975). His conclusion also was that the state grants are erratic and inconsistent and that there is an element of ad hocism in the state assistance. Even the UGC's assistance is defective in the sense that it has spread its net far too wide with the result that its impact on the improvement of standards of university education becomes severely limited. The suggestion made by the author about a more rational division of responsibilities between the UGC and the State Governments is very pertinent and needs implementation, if ad hocism is to be removed from the operation of university finances.

A very interesting conclusion that emerges out of the study of Bombay University expenditure is that the maximum percentage share in total university expenditure is claimed by administration, while the share of the academic departments has declined. Further, while the university expenditure on students' assistance programme has increased substantially, the rate of growth of such expenditure has declined. Similarly, while the university expenditure on library, books and journals has increased significantly, the per student availability of books has declined. These conclusions go to show that the expenditure pattern of the University of Bombay is not on the right lines and drastic measures need to be taken to streamline it.

The author has also sought to examine the financial soundness of the university, in terms of the principle of autonomy, adequacy of resources and built-in-flexibility. His conclusion is that the university autonomy is restricted in view of the existence of several earmarked funds. The principle of adequacy of resources is also not satisfied in the case of Bombay University in view of the declining trends in the closing balances in general funds of the university. The flexibility in the expenditure is also limited.

While the conclusions drawn by the author are pertinent, the point made about the autonomy of the university is somewhat debatable. Undoubtedly, the university autonomy has to be respected. Its implications for the role of the university in national development have, however, to be seriously considered. The universities are a part of the socio-economic set-up and they have to make their contribution to its development. The demands on institutions of higher education, emerging from the socio-economic situation obtaining from time to time, have to be met regardless of its effect on the so-called university autonomy. This is, however, a very controversial question and needs to be discussed at some other forum.

The author has been able to sift a large amount of data about the finances of Bombay University and has utilised his unbounded capacity for economic analysis to interpret the data. Although, restricted mainly to an analysis of the finances of the Bombay University, the conceptual framework built up in this study holds good to the position obtaining in most of our universities and, from that point of view, it makes a significant contribution to the available literature in this field.

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Journal of Political Studies, Vol. XII No. 1, February 1979, Post-Graduate Department of Political Science, D.A.V. College, Jullundur.

Resource Allocation on Education, (An Inter, Intra-country and Inter-temporal pattern Analysis) by G.D. Sharma, Research Cell in Economics of Education, Association of Indian Universities, New Delhi (1978).

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BHABATOSH DATTA

The history of Presidency College, Calcutta, is broadly the history of higher education in Eastern India. From 1817, the year of its foundation, up till the closing decades of the 19th century, it occupied a pre-eminent position in the whole eastern and northern region, attracting the best talents from Assam, Bihar, Orissa and the United Provinces and sometimes from areas farther away. This was true particularly after 1855 when the Hindu College became Presidency College, open to all creeds and communities. The Calcutta University was established in 1857 with its jurisdiction spreading over the wide area from Burma to the Punjab; Presidency College was the foremost unit among the ten institutions with which the University started. Comparable government colleges in the neighbouring provinces all came later—Patna College in 1863, Ravenshaw College, Cuttack in 1878 and Cotton College, Gauhati in 1901. Both Bihar and Orissa were parts of Bengal at that time and students in the entire Presidency regarded Presidency College as their best possible goal.

The need for an institution imparting education in English and in Western science, logic, philosophy and mathematics was felt early in the nineteenth century. The first positive steps were taken by a group of enthusiasts, led by Raja Rammohun Roy, the foremost among the Indian Anglicists and was supported strongly by David Hare, who had already started an English school. A Committee was formed with Justice Edward Hyde East as Chairman, but at the later stages the European members kept themselves in the background in order to emphasise the point that the demand for a new institution came mainly from Indians. Raja Rammohun Roy also "considerately kept himself out of the Committee in order not to offend the orthodox exponents of this great enterprise".

The Committee raised a donation of Rs. 1,13,179. The funds were invested with Baretto and Sons (Joseph Baretto of the firm was Treasurer of the College) and it was expected that the income from the investment would be adequate for the needs of the institution. The Hindu College was opened on January 20, 1817, in a rented house, with 20 students, but the number increased to 69 within three months. The "Rules" of the College started by laying down that "the primary object of the institution" was "the tuition of the sons of respectable Hindus in the English and Indian languages, and in the literature and science of Europe and Asia". The College had two sections—a junior School (*Patshalla*) for teaching English and Bengali reading, writing and grammar and also arithmetic "by the improved method of instruction", and a senior Academy (*Mahapatshalla*) for "the study of such language as cannot be conveniently taught in the school" and also for teaching "History, Geography, Chronology, Astronomy and Mathematics, Chemistry and other sciences".

The pupils had to pay fees at first, with the exception of "20 or 30" students sent by David Hare at his own expense from the Calcutta School Society. All fees were abolished in 1819, but were re-introduced in 1824, at Rs. 5 per month, which in those days could be paid only by the richest among the "respectable Hindus". (The price of rice in Bengal in the eighteen-twenties was around Rs. 2.50 per maund and the wages of skilled workers in Calcutta between Rs. 10 and 12 per month). The financial position of the College became particularly serious when Baretto and Sons went into liquidation, resulting in the depletion of the capital funds of the college by more than 40 per cent. Government grants were therefore sought and, as a condition for such grants, representatives of the General Council of Public Instruction were included in the management of the College. The control and financial assistance of the Government gradually increased, but the College did not become a full-fledged Government institution until 1855.

The period from 1817 to 1855 was one of steady growth in student enrolment, faculty strength and more particularly in the quality of the education imparted. Other colleges were coming up in Bengal and among them the most notable were the Government Sanskrit Colleges established in 1824 and the College started in 1830 by Alexander Duff of the General Assembly of the Church of Scotland (now the Scottish Church College). But the best talents of Bengal, including the liberal and rebel groups sometimes described as "Young Bengal", were practically all products of the Hindu College. The old registers of the College show that among the students in the eighteen-twenties were Reverend K.M. Banerji, Kashiprasad Ghosh (poet), Ramtanu Lahiri and Radhanath Sikdar (who helped in the identification and measurement of the height of Mount Everest). The students in the eighteen-thirties and early forties included Maharshi Devendranath Tagore, Ramgopal Ghose (famous orator), Peary Chand Mitra, Ramaprasad Roy (the first Indian judge of the High Court), Michael Madhusudan Dutt, Rajnarain Bose, Kishori Chand Mitra, Bhudeb Mukherji and Prasanna Kumar Sarbadhikari. The students in the College between 1845 and 1855 included the famous playwright Dinabandhu Mitra and the great social reformer Keshab Chandra Sen. There were many others and the public life in Bengal around 1850 and the following decades was dominated by Hindu College students.

The College was fortunate in having on its staff a number of devoted teachers, the best-known among whom were Henry Derozio and D.L. Richardson. Derozio was already famous as a poet at the age of 21. The influence he exercised on his pupils during his short three-year stay at the College (1828-31) was unparalleled. His liberal and rationalist ideas were avidly accepted by "Young Bengal", but they created enemies also. He was forced to resign and he died shortly after. Richardson's teaching of Shakespeare became a legend. He joined the College in 1837 and after intermittent spells of work in other institutions, came back to it in 1848 and once again in 1860 when the College had become an institution with a new name and structure. The full staff list for the period 1817-1855 contains 44 Indian and 53 European names, but some of the latter belonged to, Eurasians (like Derozio) or Indian Christian. The Indian staff list included such famous names as Rasamay Datta, Ramtanu Lahiri, Ramchandra Mitra, Prasanna Kumar Sarbadhikari and Peary Charan Sarkar.

The education imparted at the College was of a remarkably high standard. The texts read in the top class in 1827 included Pope's Poems, The Vicar of Wakefield, Paradise Lost and Shakespeare's Plays. In 1831, the General Committee on Public Instruction reported: "A command of the English language and a familiarity with its literature and science have been acquired to an extent rarely equalled by any schools in Europe". Around 1840, when there were more than 500 students in the Senior Department, the reading list included Hume's History of England; Russell's Modern Europe; Robertson's India; Bacon's Essays; Adam Smith's Moral Sentiments; and Richardson's Poetical Selections. The other elements in the syllabus were Algebra, Integral and Differential Calculus; Spherical Trigonometry; Astronomy, Mechanics and Optics; Hydrostatics, Hydraulics and Pneumatics; Perspective, Mechanical and Architectural Drawing; Practical Surveying; Translation from the vernacular into English and English composition. Some records are available of the questions set and even of the answers given at the final examinations. The answers indicate remarkable maturity of understanding and command over language. It is interesting to note that some Economics was taught and that the answers given by the students indicate familiarity with Adam Smith and Ricardo.

Presidency College

The Macaulay Minute of 1835 was a post-factum justification of the establishment of the Hindu College. The Anglicists won the day and a close connection developed between the Hindu College management and the General Council of Public Instruction (which in 1842 was replaced by the Council of Education). The number of scholarships went on increasing. New academic posts were created in 1842-43 in subjects like Experimental and

Natural Philosophy and in Civil Engineering. Some of the subjects listed in the syllabus referred to above were presumably related to the engineering course. There was even a Music class for a short period in 1827. Meanwhile, problems were arising from the fact that the College admitted only the sons of "respectable Hindus". While respectability was a matter of judgment, the prohibition against the entry of Non-Hindus as students was positive. There was the Calcutta Madrassah, established by Warren Hastings in 1785, for imparting training to Muslim students in Arabic and Persian. An English Department was added to it in 1829, but the experiment failed to achieve good results. It became necessary to arrange adequate facilities for Anglicist education for the Muslims. The question of a separate college was considered, but the number of students in such a College would have been very small. The only alternative was to re-structure the Hindu College, so as to make its facilities available to all.

There had already been a change in 1842-43 when new posts were created by the Government at the Hindu College. The condition laid down was that students from all "classes and creeds" should be admitted to the lectures given in the new subjects. The need felt for opening up all the facilities of the Hindu College to all students had to be satisfied without violating the Rules laid down by the founders and the practical solution was to retain the school section as an institution open only to the Hindus, under the name of the Hindu School, and to rename the Senior Department as Presidency College. Meanwhile, a number of full Government Colleges had been started outside Calcutta—for example, at Hooghly, Krishnagar and Dacca—and the case for a Government College in Calcutta was strong. Presidency College was formally started on June 15, 1855: it was made open to all communities and was a full Government College. The staff, buildings, equipment and library of the Senior Department of the Hindu College were all transferred to Presidency College. There were three branches then—General, Medical and Engineering—but the last two branches were later transferred to specialised institutions.

The three Presidencies of India all came to have prestigious Colleges during this period. There was already a Presidency College in Madras from 1840 and the Elphinstone College in Bombay was started in 1860. And then came the new Universities. Calcutta University was born in 1857—with a wide geographical domain, covering the whole of northern and eastern India. In the first Entrance examination held in 1857, Presidency College sent up 23 candidates of whom 22 passed. In the first B.A. examination held in 1858, two students from Presidency College were the only recepients of the degrees (one of them was Bankim Chandra Chatterjee). Presidency College continued to grow as the most important teaching institution of the University which then was only an examining body.

It will require a long exercise even to touch very briefly on the major achievements of the College in the decades following 1855. The names listed in the *Presidency College Register* for the periods 1857-1884 and 1884-1908 are the names of practically every outstanding talent in Eastern India—

of men who became famous later as academic scholars, lawyers, judges, administrators or politicians. Talented students came to the College from all neighbouring regions and sometimes from distant provinces also. A quick glance through the records of some 3,000 graduates from the College between 1857 and 1908 reveals the names of men like Gooroodas Banerji, Anandamohan Basu, Haraprasad Shastri, Byomakes Chakravarti, Asutosh Chaudhuri, Romesh Chunder Dutt (who went to England before graduation), Rashbehari Ghosh, Akshay Kumar Maitra, Heramba Chandra Maitra, Asutosh Mukherji, Debaprasad Sarbadhikary, Satyendra Prasanna Sinha,, Abdur Rahim, Albion Rajkumar Banerji, Rakhaldas Banerji, Charuchandra Biswas, Upendranath Brahmachari, Jnansaran Chakravarti, Atul Chandra Chatterji, Chittaranjan Das, Harinath De, Bhupendranath Mitra, Brajendralal Mitter, Radhakancal Mukherji, Radhakumud Mukherji, Benoy Kumar Sarkar and Jadunath Sarkar. The list includes four who became Vice-Chancellors of Calcutta University, more than a dozen who were knighted by the British Government (one was raised to the peerage) and many great scholars. There were besides, quite a number who came from the neighbouring regions. Among the famous names in this category one easily spots Anandaram Barua from Assam, Syed Hussain Bilgrami from Hyderabad and Rajendra Prasad from Bihar.

The teaching staff was increasingly Indianised. The senior posts gradually came to be given to Indian scholars and they easily established themselves as great teachers. The Indian Educational Service was mainly composed of British professors—some of them very eminent scholars—but Indians started entering the service towards the close of the last century. Dr. P.K. Roy (who later became the first Indian Principal of the College), Manmohan Ghosh and H.M. Percival built up a new tradition in philosophical exposition and literary criticism. Some Indian professors (like Dr. P.C. Ray) were never admitted to the Indian Educational Service and Jagadis Chandra Bose had to fight strenuously for securing an appropriate rank. The problem became easier after 1908, when new expansion was started, following some major changes in the University regulations and courses of study. The new recruits to the IES included famous teachers like Jehangir Coyajee and Kuruvila Zachariah. Recruitment to the IES was stopped in 1921 when Education became a provincial "transferred" subject, two of the last recruits being P.C. Mahalanobis and Surendranath Dasgupta. Apart from the professors in the IES there was a large faculty of teachers in the so-called Provincial Service and most of them were remarkably competent scholars. In fact the major part of the quality teaching that Presidency College imparted came from these teachers. No old student of the College can forget what they received from Prafulla Chandra Ghosh, or Srikumar Banerji, or Charu Chandra Bhattacharya.

Good teachers, excellent facilities (including a grand new building constructed in 1874), a good hostel, a rich library and, above all, a fertile and congenial academic climate combined to bring out the best out of the students. The University results were uniformly brilliant. Almost 90 per cent of the first class positions in the B.A. Honours and M.A. examination came to the students of the College. New subjects were introduced whenever the need was felt. An Honours Course in Economics—the first in India—was started in the College in 1908, followed immediately after by an M.A. Course in the subject—again the first in India. There were no other colleges in the region where one could take an Honours or a Master's degree in subjects like Botany, Physiology or Geology, in addition to the traditional subjects in humanities and science. The Law and Engineering Departments were closed before the turn of the century, but a new course in Commerce was introduced in 1903. Four years later this was transferred to a new specialised institution. The University introduced a B.Sc. degree course in 1904 and Presidency College adopted it immediately in replacement of the old "B" course B.A.

The Change in 1917

The first major shock in this history of uninterrupted progress came in 1917, exactly one hundred years after the foundation of the Hindu College. The University of Calcutta decided to start its own post-graduate classes and to withdraw most of the rights of Presidency and a few other colleges which were up till then offering M.A. and M.Sc. courses. There was a strong debate about this, sometimes involving unseemly contests of rivalry, but ultimately the University succeeded in taking over post-graduate teaching. Presidency College thus had to transfer its post-graduate work to the University, but was permitted to admit students for the M.A. or M.Sc. degrees, to be taught under the arrangements to be made by the University. In these arrangements, the teachers of Presidency College had a limited role as part-time lecturers. The Science Department of the College continued to hold practical classes for their post-graduate students in the College laboratories. There was an agreement between the University and the Government that the honorary services of Presidency College teachers would be available for post-graduate teaching.

These arrangements, which still continue, were unsatisfactory in almost every respect in the initial stages and they proved wasteful and counterproductive in the later years. In the years immediately following 1917, Presidency College teachers had to continue bearing the major burden of post-graduate teaching—in their honorary part-time capacity—but they did not have the responsibility that was necessary for really sound work. As the University's own post-graduate departments began to grow, the role of the Presidency College teachers became less and less important, leaving out, of course, the cases of the outstanding individual teachers into whose classes students thronged in preference to everything else. In the later years, this arrangement meant that the high-quality teachers that the College had—teachers whom any University would eagerly draw away, if only they would be willing to go—were not able to put their abilities to the fullest use. The University laws since 1951 provide for "Constituent Colleges" with full post-graduate teaching rights, but the University has not been able in the last 27 years to frame the regulations necessary for the purpose of recognising a college as a post-graduate Constituent College. In the official documents of the University, Presidency College is shown as a Constituent College, but this is only for the purpose of election to the Senate and the Academic Council.

Recent Developments

The period from 1917 to the present times has not however stemmed the progress of the College as the major centre of academic excellence in the region. New subjects like Zoology, Geography and Statistics were introduced and the College also developed an important Department for the study and teaching of Bengali literature. Political Science was made a separate subject immediately after the necessary changes were made in the University regulations. A serious loss was the transfer of its highly reputed Sanskrit Department to the Sanskrit College and the Departments of Arabic, Persian and Urdu to the Maulana Azad College. Students of Presidency College electing these subjects attend their lectures in those colleges. Among the subjects which are not taught in the College even now are Sociology, Linguistics and Anthropology.

A detailed description of the recent developments will be very lengthy, and therefore, the major facts are only emphasised here. The staff strength has increased from around 70 in 1927 to nearly 190 in 1977-78. The student enrolment in 1977-78 was 1193, including 318 post-graduate students registered through Presidency College and 73 doctoral or post-doctoral research students. The teacher-student ratio works out to be 1 to 6.3 which is one of the most favourable ratios one finds in India among the institutions of higher learning. The number of students, it may be noted, has been practically constant over the last few decades, mainly because of the high standards set for eligibility for admission. A notable feature is the large number of women students in the College. An experiment was made in 1897 to admit women students. Two girls joined and one of them completed the First Arts course (equivalent to the later Intermediate course). The experiment was not continued; but once in a while, women students had to be admitted into the post-graduate classes, when such students won the Eshan Scholarship (given to the student who stands first among all the students in all the B.A. Honours subjects) which, according to the terms of its endowment, is tenable only at Presidency College. A major decision was taken in 1944 to open the College to women students at the Honours level and since then the number of such students has gone on increasing. In 1977-78, the number of women students was 465, i.e. 39 per cent of total enrolment. It should be noted that the girl students are admitted on the basis of the same tests that are applied to boys and that their performance in the University examinations has been remarkably good. It need not be added that the teaching staff is no longer a close reserve of men.

The achievements of the students of the College have continued to be unequalled in the region. It is still true, despite the growth of a large number of Colleges, that the students of Presidency College take about 90 per cent of the First Class positions in the University examinations, even when one excludes those subjects in which this College is the only institution offering Honours Courses. In subjects like Economics there have been unbroken periods of twenty years or more at a stretch when all the First Class places were taken by the students of Presidency College. In the M.A. and M.Sc. examinations also, the graduates of this College have created records which have not been even distantly approached by any other College. An equally creditable performance is shown by the students of this College in the field of doctorate degrees.

The factors behind these achievements are many. The College gets the best among the undergraduate students in the region. There has not been up till now any affective external pressure on the Departmental Heads to deviate from their policy of selecting the new entrants only on the basis of merit, as judged by their earlier performance and their results in the admission tests. It has also been possible for the College to resist the pressure for increasing the number of seats. The number of students admitted in any year in the major Honours subjects is generally around 25 and rarely over 40. The number of highly meritorious students coming to the College has in recent years been somewhat affected by the relatively greater attraction of the Engineering Colleges, particularly the Institute of Technology, but despite this, there is a steady flow of brilliant young scholars towards challenging subjects like Physics, Mathematics, Statistics, Chemistry and Economics. The small number of students admitted makes it easy to establish close teacher-student contacts, both inside and outside the classrooms and to organise really meaningful tutorials and seminars.

There is often a complaint that the College is an 'elite' institution. If the term is used to mean that there is a specially high quality of teaching and effective education for a select band of students, the description is quite correct. But if the adjective is used to indicate income-brackets and social classes, one has to remember that the doors of the College are open to all on the basis of merit and that in 1977-78, 668 out of 1193 students (or 56 per cent) were getting scholarships. There have been occasional student troubles, some of them of serious nature, but, on the whole, the College has maintained commendable order and discipline. It is naturally difficult for a College or a University to keep itself completely insulated, if there is a general *milieu* of change everywhere. And the judgment of history on what was described as student troubles at the time they occurred has often been the reverse of contemporary opinion. The intellectual climate of Presidency College has never inhibited freedom of thinking. The first rebel was Michael Madhusudan Dutt; Subhas Chandra Bose came about eight decades later. In between and later still, there were a number of radical social reformers and political extremists who grew up in this institution, along with legal servants of the British power and social conservation.

The tradition of scholarship and devoted teaching has also continued among the members of the teaching faculty. Kuruvila Zachariah was succeeded by Susobhan Sarkar, Jehangir Coyajee by Jogis Chandra Sinha, Prafulla Chandra Ghosh by Taraknath Sen. P.C. Mahalanobis in Physics, Qudrat-i-Khuda in Chemistry, Surendranath Das Gupta in Philosophy—all helped to carry further the traditions of the College. It will be invidious to give selective details on the more recent members of the teaching staff, but one can confidently say that the faculty comprises teachers of whom any University would be proud. Many of them have worked and taught in top-ranking universities abroad and there is a constant demand for Presidency College teachers everywhere. In fact, it is sometimes difficult for the College authorities to dissuade the brilliant members of the staff from being drawn away by attractive offers, within and outside India. There is at the same time a commendable measure of loyalty to the College among the members of the teaching staff, which induce them to resist the external pulls. This loyalty is partly sentimental, especially in the case of those who were students in the College before being appointed teachers. A very important factor is the job-satisfaction that the teacher gets from the challenging task of training groups of highly intelligent and able students. One cannot, however, expect that this loyalty will be the same for all and that it is absolutely unsurmountable, particularly when the service conditions show a tendency to become adverse. There has been a visible exodus of able teachers from the College in recent years and it is time that steps were taken to stop it.

The research activities in the College have always been extensive and of a high quality. The major research work of Jagadis Chandra Bose and Prafulla Chandra Ray was done in this College and the latter in particular built up a band of earnest research workers in Chemistry, who later distinguished themselves in their own fields of specialisation. The traditions of the Physics Department were continued by Kulesh Chandra Kar and his younger colleagues, of the Economics Department by Jogis Chandra Sinha and his successors. P.C. Mahalanobis started his statistical research in a small room in the Physics Laboratory of the College in the nineteen-twenties, with a small group of associates (they became famous statisticians later) and planted the seed that grew into the Indian Statistical Institute. The work done in the Geology Department was accepted and utilised by the Geological Survey of India.

The fields of research have become even wider now. The annual report of the College for 1977 (presented on January 20, 1978) lists 22 published research papers in Chemistry, 31 in Physics and 18 in Geology. The list is incomplete, because all the subjects could not be included. In 1977-78 there were 56 registered research students for Ph.D. under the supervision of the teachers of the College and there were another 17 doing post-doctoral work. 50 research fellows were engaged in projects financed by the Government, Council of Scientific and Industrial Research, Indian Council of Social Science Research and other bodies. Particular mention has to be made of the Centre for Economic Studies attached to the Economics Department.

This Centre, financed liberally through special assistance by the University Grants Commission and adequately supported by the State Government, has produced a number of valuable research publications. More generally, the UGC has recognised the special position of the College by appointing a special Visiting Committee to make recommendations regarding the development of the College. The report of the Committee, it is understood, is being considered at the highest levels.

The laboratories of the College are well-equipped, though financial constraints have made expansion difficult. A new Science building was constructed in 1913 and there were further extensions to that building in 1960. This annexe now houses the Science Library and the Chemistry, Economics and Political Science Departments, provides additional accommodation to the Departments of Botany and Geology, and also includes a 1200 seat auditorium. The library—including the main unit, the science section and the Departmental units—is remarkably rich, with collections dating back to 1817 and with a large number of rare books (including first editions) not available anywhere else. In 1977 the total number of books was 1,26,000, excluding more than 15,000 bound volumes of journals and thousands of unbound issues of journals. The number of books lent out in 1976-77 was 1,31,512. With nearly 1200 students and 189 teachers, one gets an average of nearly 100 issues per eligible reader during the year. Here again, as in the case of the laboratories, the financial limits on expenditure and lack of space have combined to slow down growth.

Problems and Prospects

The financial problems have assumed a major dimension now, though the Government spends on this College much less than the grants it makes to the smallest of the Universities. There is, however, the criticism that the expenditure per student in the College is high. There is some lack of logic in the simple arithematical comparisons that are often made in terms of the average cost per student enrolled. If instead one compares the costs per graduate produced, the picture for Presidency College will be very favourable—for there are very few failures and very little dropping off or stagnation. If one goes further and calculates the weighted average cost by putting scaled weights on the first class and second class honours graduates produced vis-a-vis pass graduates, Presidency College will be found to be one of the best examples of a high degree of cost-effectiveness.

The basic problems of the College currently are not, however, financial. The main unsolved difficulties relate to the position of the College in the general educational set-up of the State and in the structure of Government's own educational system. The first involves the question of the relation between the College and the University of Calcutta. The changes inroduced in 1917 have not yet been rectified, though it lies within the powers of the authorities to convert the College into a fully functioning Constituent College with post-graduate affiliation. Even in regard to undergraduate teaching, the College suffers because it is treated as just one of the 200 colleges affiliated to the University. In these days of the various manifestations of the pressure of numbers, the courses of study, the lists of text books, the examination system all tend to be geared downwards to the lowest common level. Good students do not get the academic considerations they deserve. Good teachers feel frustrated when they find that the existing system exerts a strong pressure on them to mould their teaching to the requirements of a low-level examination system. The solution is to give the college a large measure of autonomy with rights to determine the courses of study and the methods of valuation. The physical and human resources of the College are better than in many autonomous institutions of higher learning and it is a waste of social resources not to get the best out of the inputs available.

The question of autonomy brings in the other question of the relation of the College with the State Government. The College had in the past enjoyed a large measure of freedom within the governmental structure. While all appointments were made by the Government, the head of the College was generally consulted at the time of any major change by way of transfers, promotions or new appointments. There was no interference in any academic matter. Fortunately, the autonomy of the College in academic matters has not been disturbed up till now, but there is a visible tendency to regard Presidency College as an institution just like any other government college. A lecturer in a University (or in a private college fully financed by the Government) knows that his academic work will not be disturbed by a sudden break, unless he himself elects to go elsewhere. On the other hand, a Presidency College teacher doing excellent teaching and research work has in recent years been subject to a constant threat of being transferred to a college where he will not have either the facilities or the climate necessary for advanced work and where the students are not qualified enough to benefit from high-level teaching.

There is a strong case for improving the colleges in the countryside, but the best way of doing it is not by impoverishing the best college in the region. In fact, such a policy injures Presidency College, without improving the other colleges, because it only encourages the able teachers to seek employment outside Government service, in which the terms of service, all points considered, are worse than in Universities or even in government-financed private colleges. The important thing is to provide equal opportunities for all meritorious students to pursue their education at the level they deserve. If it is complained that a large number of students of Presidency College (as of the Institutes of Technology) come from affluent families, the reason lies in unequal opportunities at the school level. It should be possible to establish good schools everywhere, but it will be practically impossible to have colleges like Presidency all over the region. It will be much easier and less costly to bring all meritorious students to the best among the colleges through an extensive system of scholarships, than to try the impossible task of scattering the really good teachers thinly for teaching two honours students here and three students there.

In order to perform properly its task of providing high level education, Presidency College, like the Institutes of Technology, the Institutes of Management and the Indian Statistical Institute, requires effective freedom *vis-a-vis* both the University and the State Government. It is necessary to avoid the semantic trap which seems to have become operative. Call an institution a 'University' or an 'Institute' and it comes to have full autonomy, large building grants and good scales of pay for its staff, however, poor its actual performance may be. On the other hand, call it a "College" and then the quality of the work done by it ceases to have the importance it deserves. The basic point is that if higher education in the true sense of the term is really desired for the deserving students, such education should be entrusted to institutions which can ably perform the allotted task. If it is admitted that the country really has outstanding students and that it is in the national interest to train them up to the highest level attainable in the sciences, in social sciences and in humanities, it has also to be recognised that such students should get the teachers, the libraries and laboratories, the courses of study, evaluation systems and the academic climate they deserve[1]. Institutional excellence is not easily attained, but it can be easily destroyed by short-sighted decisions.

References

1. The historical material has been collected mainly from (i) *The Presidency College Register* (Bengal Government Press, Calcutta, 1927); (ii) *The Presidency College Centenary Volume* (West Bengal Government Press, Calcutta, 1956); and (iii) *Hundred Years of the University of Calcutta* (Calcutta University, 1957). Data regarding the present position have been taken from the recent annual reports (*Prāsangikī*) presented by the Principal on the Founders' Day, kindly supplied by Principal P.C. Mukherji whose office also gave the details about the present enrolment, staff strength etc. Principal Mukherji has not however seen the typescript and is not in any way responsible for the views expressed.

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The University as Centre and Periphery[1]

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Universities in the modern world are parts of complicated systems. They are disseminators and producers of knowledge in their own nations, playing increasingly important roles in technological societies. They are parts of an international knowledge system as well, interacting with institutions abroad. This paper is concerned largely with the international roles of universities and especially with the inequalities among institutions of higher education in different nations. The basic point of this paper is that universities in the Third World find themselves at a disadvantage in this international knowledge system. It is my purpose to discuss the nature of this disadvantage, its implications for the international knowledge system, and to suggest some steps which might ameliorate the situation.

Place of Education

It is widely assumed that a 'new international order' which is predicated on a more equitable international system should include a greater degree of autonomy and equality for educational institutions in 'have not' parts of the world. This paper indicates that the inequalities of the international knowledge system run very deep, have strong institutional support, and are often in the interests of those who wield power, be that power military, economic, intellectual or technological. It is difficult to understand how even the best of intentions can dislodge the basic power relationships among nations, especially when those who control power have shown little inclination to yield it in the past. Yet, education is not seen to be as crucial as military policy or international power politics, and there are some signs of change.

At the heart of this discussion is the notion of centre and periphery.

The present international educational equation has certain institutional and intellectual 'centers' which give direction, provide models, produce research, and in general, function as the pinnacles of the academic system. At the opposite end of the spectrum are universities which are 'peripheral' in the sense that they copy developments abroad, produce little that is original, and are generally not at the frontiers of knowledge.[2] The 'central' institutions are research-oriented, prestigious and oriented toward an international knowledge systems. Their libraries tend to be large and their laboratories well equipped. The central institutions have access to the bulk of research funds, produce most of the doctoral degrees, and are recognized as leaders. In a sense, the central universities are the 'producers', although they also have an important teaching function. The 'peripheral' institutions, which are in the large majority, are basically distributors of knowledge. They are dependent on the central institutions for innovations and for direction. Their facilities are, in general, less adequate, the professors less well compensated, and less prestigious.

Centres and peripheries exist in national university systems, and the concept has relevance beyond purely international comparisons. As David Riesman has pointed out, a handful of universities in the United States set the academic tone for the rest.[3] His concept of the meandering academic procession has relevance to this discussion. A small number of recognized 'central' universities in America set the tone for the rest of the procession which tails after. Relatively few institutions present alternative models or go in radically different directions. The current debate concerning the undergraduate curriculum, is not surprisingly, led by Harvard University. When Harvard gives its approval to a new trend, as it has done in the past with regard to legal and business education, other institutions generally follow. Further, the 'central' universities receive an overwhelming proportion of research funds, have research-oriented faculty, and the like. The 'peripheral' institutions not only follow, but they seldom blaze new trails in education even in the United States, where fiscal and other constraints are not so serious as in most Third World countries. In Britain, the impact of Oxford and Cambridge on the rest of post-secondary education is immense and in France, Paris has dominated the entire system. Thus, the centre-periphery concept functions in national settings and is related to many elements, and not only the economic inequalities which pervade the international scene.

Third World universities are without exception peripheral institutions in the international scene. They look to universities in the industrialized world and particularly to the United States, Britain and France for models, for research, and for direction. Relatively few Third World universities produce top-level scholars and researchers as they usually lack the infrastructures, such as libraries and laboratories, to aid in the production of advanced scholarship. Further, they often lack the orientation to scholarly production. Third World institutions do not often "feel" themselves to be central institutions. Thus, there is a combination of psychological dependence and the lack of facilities and traditions which are necessary.

Yet, Third World universities are, in many cases, key institutions in their own societies, and in this sense are probably more important to their local circumstances than the major international universities like Harvard or Oxford are to their localities. Third World universities are among the few fully modern institutions in their societies. They produce the highly trained elites necessary for the operation of the modern state, they are very often at the political vortex of their societies, they produce cultural commentary and criticism, and in some Third World nations, make important contributions to defining newly established political entities. Professors are often called on for advice and frequently serve in high government positions.[4] Students often play a key political role through their activism, and in a number of instances have toppled governments. The 'moral authority' of the academic community is a force in societies without a large number of political articulate individuals. In this sense, Third World universities face a curious paradox: they are peripheral in the international sense and depend on foreign institutions in many respects while at the same time are quite central to the local society.

The role of universities in Third World countries is complicated and diverse. It is also difficult to generalize about academic systems in the Third World. A few nations, such as India and the Philippines, have large university systems to which access is fairly open to that minority, usually urban, of the population which has attained secondary education. Other systems remain elitist, enrolling only a tiny minority of the relevant age groups from the very top of the society. In some Third World nations, professors in universities are called on to render advice to government and industry while retaining their academic roles, while in others, some of the best academics are lured into full time government service. In some Third World nations, the academic profession is highly paid and prestigious, while in others, remuneration is less adequate. In some nations, the bulk of indigenous elites are trained within the country, while in others, large numbers of students are sent overseas for advanced study. The political freedom of academic institutions also varies according to local conditions. In some Third World nations, universities have a fairly substantial degree of autonomy and freedom of expression even where parliamentary system do not operate, while in others, universities are subjected to rigid control and sometimes to repression.

Thus, while there are important differences among universities in that diverse group of nations which are labelled the Third World, there is no question that as a rule universities are considered important societal institutions and stand at the centre of their societies. They are, for the most part, taken seriously and they perform key societal roles. Third World universities face the paradoxical situation of being peripheral in an international sense while central in a smaller, national context.

Several Third World nations function as 'regional centre' and are, in a sense, mediators between the 'International' universities in the industrialized nations and the bulk of peripheral institutions in the Third World. Institutions such as the University of Cairo, the University of Delhi, the University of Buenos Aires, the National University of Mexico, and to some extent, the American University in Beirut have trained large numbers of students from other countries in their region. These universities also serve as foci for research and publishing in their regions. The worldwide distinction between centre and periphery is itself complicated by local, regional, and international nuances which are only alluded to in this discussion.

The anatomy of international inequality is a complicated one, but some of the key factors are worth describing as they are crucial to understanding the status of universities in the Third World. The following elements contribute, in varying degrees, to the anatomy of inequality:

1. The historical tradition of universities is a Western tradition, and has little if anything to do with the intellectual or educational traditions of the Third World.[5] Although many Asian and African countries had highly developed indigenous educational systems, the institutional models followed in the creation of modern schools were uniformly Western in nature. The impact of adapting a basically foreign educational model has been considerable. The institutional models, the curriculum, the pedagogical techniques, and basic ideas concerning the role of higher education in society were all Western. The particular Western institutional model followed had to do with the accident of colonial domination, although even those Third World nations, such as Thailand, China and Japan, which were never formally under colonial control, used Western models. In these latter cases, however, the choice was at least up to the countries involved. It is significant that no Third World nation, regardless of political ideology or orientation, has basically altered a Western university model. Substantial efforts have been made to adapt the curriculum to suit perceived national needs, but even these have been only partly successful. The lack of textbooks, scientific background, and the fact that most Third World academics have been trained according to Western models has made adaptation difficult.
2. The language of higher education in many Third World nations is a Western language. Colonial authorities, without exception, established higher education in their colonies through the use of European languages. This educational policy was linked to the use of Western languages for administrative, commercial and legal purposes as well. The impact of the use of Western languages was—and remains—immense. These languages became the languages of political, social, and to some extent, cultural discourse. They were the languages of power and of wealth; and they were the languages of prestige. European languages were also quite limited in the extent of their use. Only a tiny minority was able to use the colonizer's language—in India perhaps 1% of the population was literate in English at the end of the

colonial period, and only a modestly higher proportion can speak English now. Similar proportions were probably common in other colonies. Even Third World nations not under colonial domination were influenced by European languages—there was a debate in Japan in the 19th century concerning the possible use of English in some parts of the educational system. While some Third World nations have attempted to substitute indigenous languages for Western media, and in a few cases these efforts have met with considerable success, the impact of Western languages in the Third World remains very great.

3. Third World nations are basically 'consumers' of knowledge, dependent on industrialized nations for research, interpretations of scientific advances, and in general, for information. The vast bulk of the world's scientific research is done in the industrialized nations, since funds and facilities for research exist there. In addition, Third World universities generally place less stress on research for academic advancement. The kinds of research produced in the industrialized nations is often of limited relevance to the Third World, and it takes a long time for research results to filter through in any case. If anything, the research gap is increasing, as knowledge grows rapidly and research in many fields requires more sophisticated equipment. There is a danger that Third World nations will be increasingly priced out of the research market.

4. The means of communication of knowledge are in the hands of the industrialized nations. The major scholarly journals, publishers, bibliographies, and libraries are in Europe and North America. This simple fact determines the flow of knowledge and means that in many ways the needs of the Third World are not met. Journals focus on their own national audiences for the most part, and pay little attention to developments in the Third World. Publishers are largely uninterested in Third World authors. And perhaps most serious, there are relatively few outlets for scholarship, creative writing, and research reports by Third World intellectuals.[6] The implications of the control of communications networks are considerable and tend to orient the academic systems of the Third World toward the industrialized nations.

5. Foreign training and the 'brain drain'. Large numbers of students from the Third World study in the industrialized nations.[7] More than 2,00,000 students from foreign countries study in the United States, the large majority from Third World nations. Many thousands more study in Britain, France, West Germany, the Soviet Union and other European nations. While assessing the impact of foreign study is difficult, it is clear that training in the industrialized nations orients students to the educational systems, the intellectual directions, the methodological foci, and the work habits and professional expectations of the 'host' country. While many students do not return home, resulting in the much discussed 'brain drain', large numbers do return,

and others tend to orient themselves to the educational experiences they underwent in the industrialized world. While the skills obtained in the West are of importance to the Third World, the 'unanticipated' results of foreign training often have an impact as well.

Intervening Factors

These factors are perhaps inevitable results of an international system based on deep historical and contemporary inequalities. These, and other, elements reinforce the peripheral status of universities in the Third World. They also make these universities dependent, in varying degrees, on educational and intellectual structures in the industrialized nations. There is little that can be done about these realities. In addition to these perhaps inevitable results of an international system, the policies of both industrialized and Third World nations reinforce and sometimes deepen the inequalities. Foreign aid programme, cultural exchange programme, and similar policies often have the result of continuing relationships of dependency. The use of Western 'experts' often reinforces Western models of academic research, the curriculum, and other aspects of higher education. The provision of Western textbooks may have the same result.[8] The industrialized nations supply expertise in part to maintain their influence over Third World universities, in part for altruistic motives, and perhaps also because of feelings of intellectual superiority. While educational aid is but a small part of broader political struggles, there is no question but that it is linked to these struggles.

Government policies are not alone in pursuing policies which maintain their advantageous role in the Third World so as to maximize profits from exports of books, advertizing, communications technology and the like.[9] Corporations like International Telephone and Telegraph, McGraw-Hill Publishers, Longmans Publishers, and many others are important forces in the communications fields in the Third World. Governments of industrialized nations often work closely with multinational firms. The now defunct Informational Media Guaranty Programme of the United States Government, which underwrote the export of American books by private publishers, is an example of this cooperation.

As Philip Coombs has pointed out, education is a "fourth dimension" of foreign policy because it is seen to fit integrally into the national objectives of industrialized nations.[10] Third World nations accept foreign educational assistance for a variety of reasons. To some degree, it is felt that any help is a useful increment to very perplexing problems of development. In addition, it is not unnatural for academics who were trained in Western universities to feel that the continued use of Western models and equipment is natural, even if in some cases this impedes indigenous development. The whole question of foreign assistance in education is a complicated one. For the purposes of this paper, it is only necessary to point out that such assistance is a double-edged sword, maintaining patterns of dependence while at the same time often providing needed technical help.

Nature and Complexity

The foregoing discussion has argued that Third World universities are peripheral in an international academic system and that this situation is the result of a combination of factors, most of which reflect international inequalities in wealth, power and resources. The policies of the industrialized nations have also reinforced established relationships, thus helping to maintain the peripheral status of the Third World. It is not necessary to fully analyze the current status of universities in the Third World, as the situation is fairly evident to most observers. It is, however, useful to discuss several key issues in order to indicate both the nature and the complexity of the peripheral status of these institutions.

Books and journals are an important element of the knowledge communications process. The world's book production is concentrated in the industrialized nations. This is especially clear for scholarly books, research reports, and similar publications which are crucial for universities. It has recently been estimated that 62% of the world's periodicals in the social sciences are published in the United States, Britain and France.[11] The prestigious scientific journals are virtually all published in the West and largely in the United States, Britain, France and to a lesser extent West Germany. Scholars orient themselves to these journals, write in the languages in which the journals publish—largely English at present—and to some extent address the research issues which are important to the major journals. There is a similar phenomena in the world of books. The major publishers are located in the industrialized nations, and scholars in the Third World often prefer to have their books published by these metropolitan publishers since these firms offer greater remuneration and exposure to an international audience. Books are not readily accessible in the Third World, and the location of publishing firms, patterns of international trade, the language of publishing in the sciences, and all reinforce the peripheral status of Third World universities.

There are relatively few universities in the world which produce major research discoveries and which have the laboratories and other facilities to support high level research. These universities are located in the industrialized nations, and constitute a small 'elite' among the world's universities. Even in the United States, there are major differences among universities. Of the more than 3,000 campuses in the U.S., only about one hundred were selected to receive federal government science grants of more than ten million dollars per year.[12] And the top ten universities received about sixty million dollars annually in research support. Third World universities simply do not have the resources for advanced scientific research in most fields, and they are, in this sense, at a considerable disadvantage. Funds are generally not available, the infrastructures do not exist, and the nucleus of creative researchers is often too small to permit research work to take place.

Two quite different nations will indicate some of the problems of the Third World. India is a very large nation with a well developed university system, a large number of trained scholars, and considerable infrastructure. Kuwait, on the other hand, is a small nation which has only recently begun to develop higher educational institutions. It has the considerable advantage of virtually unlimited wealth to help in the establishment of new universities. But both nations continue to be peripheral and are likely to remain so. India now has the third largest university system in the world, but the standards of quality in much of the system are fairly low. In addition, even in that small sector of the system which is concerned with research, with graduate training, and with participating in the international scholarly world there are disadvantages. The academic system is in general poorly funded and top quality laboratories are rare. Libraries tend to be small and often quite out of date. While there are many Indians who are well trained and quite able, they tend to be geographically dispersed (with some of the very best working abroad). Very few Indian universities have the 'critical mass' of research personnel, facilities, and the will to produce top quality research to contribute in the international knowledge system. Several specialized institutes, such as the Indian Institutes of Technology and the Tata Institute for Fundamental Research, have made solid contributions. But most of the academic system, including the graduate university departments, remain limited in the quality of their work. Interestingly, a proposal made to the Education Commission in 1966 to establish a small number of top-quality universities in India was scrapped because it was considered anti-democratic. As is common in many Third World nations, some of the best scholars are enticed into administrative or government service, and are not able to do academic work. Because the upper levels of the Indian academic system continues to function in English, there is no problem with communicating with scholars in the industrialized world—and in many fields there is as much contact between Indian scholars and their colleagues in other countries than there is within the country. While the publishing industry is fairly well developed and a number of specialized scholarly journals exist, there is nevertheless a reliance on books and journals published abroad, since most of the most advanced work is done in the industrialized nations.

Kuwait's problems are, in many respects the reverse of those of India. Funds for the development of higher education are virtually unlimited, and the problem is one of lack of infrastructure and trained personnel. Kuwait university was founded in 1966 and in a decade has grown to an enrollment of 5,000 students. It has engaged in a massive building programme, and plans to continue its expansion. But the university is faced with a severe shortage of trained indigenous faculty—only about 10% of the faculty are Kuwaitis, with the majority coming from Egypt. The library remains inadequate, and middle level personnel needed for the operation of a university are in short supply. The science and medical faculties are conducted in

English—creating problems for many students whose knowledge of English is not adequate. Even in the arts, social sciences, and education, which use Arabic as the medium of instruction, there are not enough books in Arabic and students must rely on English language texts. While it is possible that Kuwait's university will be able to develop top level research and training facilities in a few areas such as petroleum technology, it is unlikely that even with massive expenditures that Kuwait University will be able to build world-class university in the very near future. The problems of building the infrastructure are too great, the disadvantage of having to function in a language which is not at the forefront of international research, and the continuing shortage of highly trained personnel—especially in graduate level research and teaching—are all quite serious.

Both of these examples illustrate some of the problems of building universities which can function at the international centres of knowledge. Even with the advantage of a long historical development—India's first universities were established in 1857—and a large academic community, India has not been able to develop world-class universities. If Indian policy makers had been able to sacrifice rapid expansion for quality, it might have been possible for India to establish and support such universities, but this was not possible given the political realities. And Kuwait's impressive financial resources have not been able to rapidly develop a top-quality university, although the strides that have been made in a decade are very impressive.

Academic peripheries are by no means limited to the Third World. The smaller European nations have recognized their peripheral status, and have tried to adjust to it. Universities in Scandinavia and Holland have increasingly relied on English as a key language of scholarly interaction, and many scholars in these countries write in English. A number of Dutch academic journals now appear in English instead of Dutch to take advantage of an international audience. Scholars in these countries regularly study abroad and maintain contacts with academics in the United States or Britain. But because of long academic traditions, closeness to academic centres, and sufficient resources to maintain contact and contribute to research and scholarship, these nations have remained close to the centres of intellectual life.

Removal of Inequality

Given the complicated—and perhaps inevitable—nature of centres and peripheries in the international academic world, how is it possible to move from the periphery to the centre? A few nations have been successful in transforming their universities and as a result moving to an academic centre. The United States is the most successful example. Less then a century ago, American colleges and universities were unquestionably intellectual colonies of Europe—and especially of Britain. Little original research was conducted, and it was not possible to reach the pinnacle of research and scholarship by studying only in the United States. By adapting the emerging German universities—which stressed research and graduate training—by investing large sums in education, by developing an academic system which served national and local needs through applied research and development and could thereby call on increased financial support, and by slowly building up the infrastructures of scholarship, the United States was able, over a period of a half-century, to build an academic system of great influence.[13] A considerable factor was also the growth in wealth and power of the United States and its industrial development. Similarly, the German universities went from a peripheral status in the late 18th century to the centre of international scholarship by the mid-19th century. Again, a strong commitment to higher education by the state, an increasingly powerful national state, industrialization and a 'new idea'—that of research and graduate education—all contributed to the growth of the German university.[14] More recently, Japanese universities have attempted to improve and become first class institutions. Clearly, the University of Tokyo is an internationally recognized institution of excellence, but the Japanese academic system has not developed the eminance and research productivity that its present status as a world power might indicate. Insufficient funds have been devoted to higher education, and Japan's industrial and technological development has largely been based on the use of foreign models.[15] The fact that Japanese is not a world language has also hindered the development of world-class universities.

Thus, movement from the periphery to the centre is not impossible, but it is very difficult. Most national university systems, especially in the Third World, will simply be unable to make this transition. This does not mean that academic systems should not strive for excellence or that some of the inequalities on the international scene cannot be ameliorated to some extent. But before these inequalities can be removed, there must be a recognition of the elements of a highly complex reality. It has been the purpose of this discussion to point out through the use of the centre-periphery model, that a simple desire to remove inequalities as part of a commitment to a 'new international order' is extraordinarily difficult.

Role of Universities

This discussion has focused largely on higher education and on the factors which relate to the role of universities in the Third World. But universities and educational policy are linked to larger political, social and economic factors in society and in an international context. In many respects, there is no new international order, and none is emerging. The basic world economic system remains intact despite the oil crisis, world-wide inflation, the emergence of the Third World as a vocal—and sometimes effective—force on the world scene. Even the Socialist countries function largely within an international economic system which has maintained the power and wealth of the industrialized nations. The much discussed shift in wealth, and power, which was expected after the rise in oil prices in 1973 has not rocked the international system although it has had some impact. And as we have pointed out, no amount of petro-dollars has enabled Kuwait to build a fully effective university. Many of the skills, technology, and infrastructures of the industrialized nations cannot simply be purchased. By and large, the industrialized nations have sought, with considerable success, to maintain their power and influence. Foreign aid has not substantially altered the equation of inequality, and many have argued that such aid is intended, in considerable part, to maintain the status quo.[16]

The prognosis for major change in the international academic status quo is mixed. The poor will, in general, remain poor. They will not have the resources to develop advanced research capability. Those few Third World nations, such as India and China, which have a large number of skilled individuals and a fairly broad industrial and technological base can develop some advanced capability, as the manufacture of nuclear weapons by those two countries testifies. Most, however, will remain peripheral in most every sense. Those few nations, such as Kuwait, some of the other oil-rich nations and rapidly industrializing countries like Singapore and Malaysia have a brighter future. While it is unlikely that they can catch up fully with the industrialized nations of Europe and North America, the base for solid progress has been built. But virtually all Third World nations will remain linked to the technological networks dominated by the industrialized West—even those nations, such as Cuba, Tanzania, and China which have tried consciously to alter their development models remain dependent to a considerable degree.

If understanding is a prerequisite to change, then it may be helpful for the international community to understand the nature of the "old international order" in general terms and in the very complex ways in which this order relates to higher education. This paper has focused on the nature of the international knowledge network in an effort to provide such an analysis. Such a discussion can at least permit those in a peripheral position to understand the nature of their plight and perhaps to ameliorate it to some extent. These are somethings which can be done to maximize independence and freedom of choice. The following is a partial listing of changes which can be implemented without major cost and which can help to ensure a degree of intellectual independence.

1. A clear and realistic appraisal of the position of a national academic system in its international context can help with planning. Most academic systems are to some extent peripheral to the major systems of the large industrialized nations, but the nature of this dependence varies.
2. The building of academic and intellectual infrastructures, such as libraries, journals, publishing houses, and the like will stimulate self-reliance and aid in the establishment of an independent academic culture.

3. The research function of universities is very important. Even if it is only possible to sponsor research in a few areas, perhaps related to the local economic base and in fields which will foster a national culture, such development will be useful. In many fields requiring expensive equipment and a tradition of previous scientific work, Third World nations will continue to be dependent on the industrialized countries, but an independent research base can be established.
4. Attention needs to be paid to national and regional languages as media of intellectual communication, political life and scholarship. In some countries, reliance on European languages is probably inevitable, but there is no question that much more can be done in the Third World to foster indigenous languages. It may be very difficult to shift to an indigenous language, and clearly there would be some loss of contact with the international scholarly community, which functions in a European language. But the point is that the pros and cons of the language situation must be carefully evaluated.
5. Foreign assistance must be carefully examined for its intended and unintended consequences. Third World nations must be careful to accept only that assistance which is of direct benefit to them.
6. The impact of advanced training abroad needs to be examined more carefully from the viewpoint of the Third World. What does the 'brain drain' cost Third World nations? Are the research skills learned by the foreign-educated relevant to local needs? What are the psychological and political impects of foreign study? The answers to such questions, which will differ from nation to nation, should determine the kinds and amount of foreign study encouraged by Third World governments and universities.

With all of this pessimistic discussion, it should be recalled that universities, in all parts of the globe but perhaps especially in the Third World, are very important institutions. While they may be peripheral in an international contest, they are highly important in the national setting. Third World universities are central to their societies not because they educate key groups and provide assential skills, but because they are symbols of the future. Universities help to build independent national cultures in states often without a sense of nationhood. They provide skills and engender commitment to broader intellectual values. And they sometimes play important political roles. Thus, universities function as parts of an international order and in a national context at the same time. The many roles of universities often lead to confusion.

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Indian Students and Trainees in Scientific & Technical Fields Who Went Abroad During 1965-1975

B.K. NAYAR, C.R.S. RAO and S.S. GUPTA

Introduction

Study and training abroad have become important aspects of higher education in the post-war world. Considerable numbers of Indians have been to the developed countries for advanced study and training, especially in Scientific and Technical (S&T) fields. India has also provided educational facilities to a large number of students from the developing countries.

A special section for the enrolment of Indians engaged in study, training or employment abroad (called the "Indians Abroad Register"[1]) was started in 1958 in the National Register of Scientific and Technical Personnel, maintained by the Council of Scientific and Industrial Research. Indians with a degree or diploma in Science, Engineering, Technology, Medicine or Business Management, who are either currently abroad, or have returned to India after 1957, are enrolled in the register. Particulars of registrants are printed and published periodically in the form of Indians Abroad Directories[2–4] and widely distributed to promote the absorption and utilisation of such persons. Highly qualified registrants, without assured employment on return, are also considered for temporary placement in the Scientists' Pool[5] on the basis of the data furnished. Their biodata are circulated through the CSIR bulletin *Technical Manpower*[6]. Registration, however, is voluntary Not all eligible persons care to register themselves in the Indians Abroad Register. Many register themselves only near the date of their return, or even after return. The Register cannot, therefore, serve as a proper record of the actual numbers going abroad for study and training, or facilitate calculation of the actual rate of their return. The data in the Register have, however, provided insight into various characteristics of Indians who had gone abroad for study, training or employment.[7–14]

The Institute of Applied Manpower Research, New Delhi, has carried out a number of studies[15–19] on certain groups, or categories, of personnel who had gone abroad for study, training or employment. Of special significance was an analysis[19] of the voluminous data regarding issue of ordinary passports during 1960-67, to various categories of S&T personnel, for study or training abroad.

Indians seeking foreign exchange for going abroad have to supply certain basic data to the Controller, Exchange Control Department, Reserve Bank of India. Most Indians require foreign exchange for expenses abroad; hence most of those intending to go abroad file their biodata with the Reserve Bank of India. The data on the outflow of Indians for study and training abroad, available with the Reserve Bank of India, may therefore be taken as an important source material for the study of the number of students and trainees in different fields going to various countries from year to year. A brochure[20] based on the data received from the Reserve Bank of India, Bombay, has recently been brought out by the Statistics and Information Division, Ministry of Education and Social Welfare, Government of India.

Scope and Limitations

The present study is based on data in the above-mentioned brochure. It seeks to analyse certain characteristics of Indian students and trainees in S&T fields including medicine, veterinary science, and nursing, who went abroad during the decade 1965-66 to 1974-75.

The data suffer from certain limitations. The terms "Student" and "Trainee" have not been defined. The levels of highest qualification obtained in India before proceeding abroad are not indicated. The qualifications for which studies were undertaken by Indian students abroad are not available. Data on students working for advanced degrees such as M.S. or Ph.D. are mixed with the data on trainees undergoing professional training which may not lead even to membership of specialty boards or professional organisations. The levels of training undergone abroad, whether post-diploma, post-graduate, or post-doctoral are also not known.

Data relating to certain fields have been combined together as in the case of (a) agriculture with forestry, (b) engineering with architecture, (c) technology with industry and (d) medicine with veterinary science. The subject field "Industry" has not been defined. In the following discussion, the words Agriculture, Engineering, Technology and Medicine, spelt with capital, may be taken to include the connected fields. Information regarding students and trainees in Arts and Humanities (A&H) has been indicated in a few cases for the sake of comparison.

Age distribution, distribution of Indian students in foreign universities, and names of institutions imparting training to Indians abroad are also not available.

The term "students and trainees" has been used in the present study to mean those Indians who had sought foreign exchange for going abroad as "students and trainees".

Fields of Study

Distribution of Indian students and trainees abroad according to fields of study for the period 1965-75 is given in Table 1.

Table 1

STUDENTS AND TRAINEES IN S&T FIELDS

Field of Study	*Students and Trainees who went abroad*					
	1965-75		*1965-70*		*1970-75*	
	No.	%	No.	%	No.	%
Science	6,436	18.6	3,266	16.7	3,170	21.0
Agriculture	705	2.0	469	2.4	236	1.6
Engineering	17,758	51.2	10,471	53.5	7,287	48.3
Technology	6,401	18.5	3,683	18.8	2,718	18.0
Medicine	2,118	6.1	1,308	6.7	810	5.4
Nursing	1,242	3.6	380	1.9	862	5.7
Sub-total (S&T)	*34,660*	*100.0*	*19,577*	*100.0*	*15,083*	*100.0*
Sub-total (A&H)	*12,288*		*5,263*		*7,025*	
Total	*46,948*		*24,840*		*22,108*	

Source: Indian Students Going Abroad and Foreign Students in India, 1965-66 to 1974-75. New Delhi, Ministry of Education and Social Welfare, 1977, pp 150. (Studies in Educational Statistics No. 4-1977).

Nearly 47,000 Indian students and trainees are deemed to have gone abroad during the decade 1965-75. Those belonging to scientific and technical fields numbered 34,660. They constituted nearly three-fourths of the total including arts and humanities.

Engineering accounted for 17,758 students and trainees, constituting 51.2 per cent of the total in S&T fields The other two important fields of study, Science and Technology with over 6,400 each, contributed about 18.5 per cent individually. Medicine with over 2,100 accounted for 6.1%, Nursing with about 1,250 came to 3.6%, and Agriculture with about 700 constituted 2.0% respectively of students and trainees in S&T fields.

On the whole, engineering and technological fields accounted for 70 per cent, scientific and agricultural fields about 20 per cent, and medical and nursing personnel about 10 per cent of the total Indian students and trainees in S&T fields who went abroad during the period 1965 to 1975.

The figures for the two quinquennia 1965-70 and 1970-75 have been given separately in the table to assess the broad trends. Those who went abroad for education or training in S&T fields during 1965-70 numbered 19,577. They constituted 78.8 per cent of the total including A&H.

The total number of students and trainees who went abroad during 1970-75 was 22,108, about 10% less than that during the previous five year period. Those belonging to S&T fields was only 15,083, nearly 4,500 less than that during 1965-70. They constituted 68.2% of the total, compared to 78.8% during the previous quinquennium.

The fall of about 4,500 in the number of those who went abroad for study or training in S&T fields during 1970-75 was shared by all categories except Nursing. The decrease in numbers was about 3,000 in the case of Engineering, about 1,000 in the case of Technology, and about 500 in the case of Medicine. There were marginal falls of less than 250 each in the case of Agriculture and Science. Nursing was the only field in which the number abroad in 1970-75 was larger than that during 1965-70, the difference being about 500.

It may be noticed that the number of students who had gone abroad in A&H fields showed a considerable rise during the latter half, in striking contrast to most of the S&T fields.

Changing Trends

The annual variation in the number of Indian students and trainees belonging to S&T and A&H fields who went abroad during 1965-75 is given in Figure 1.

S&T personnel far outnumbered those in A&H throughout the period. The numbers in both the categories showed continuing fluctuation. The years 1966-67, 1968-69, 1970-71 and 1973-74 showed comparative peaks followed by steep declines. The numbers of S&T personnel going abroad show a gradually declining trend. In the case of A&H this trend appears to have been reversed after 1971-72. Compared to 4,311 students and trainees in S&T fields in 1966-67, the peak in 1973-74 was only 3,916. In the case of A&H, there had been a fall from 1,447 in 1966-67 to 1,046 in 1970-71, followed by a rise to 2,457 in 1973-74. Another significant feature is the very steep fall in the number of S&T personnel who went abroad for study and training in 1971-72 and 1972-73. In the case of A&H, the numbers had remained more or less stationary during the three years 1970-71, 1971-72 and 1972-73.

Indian students and trainees who went abroad during 1965-75 in different S&T fields is shown in Figure 2.

The number of students and trainees belonging to different fields of science and technology show much greater variation. The period 1965-67 was one of increase in all categories. 1968-69 was a peak year in all categories except Engineering, where the peak was a year earlier. 1973-74 also showed a peak in the case of all categories. As far as the minima are concerned, 1967-68 shows a minimum in all cases except Engineering where it is an year later.

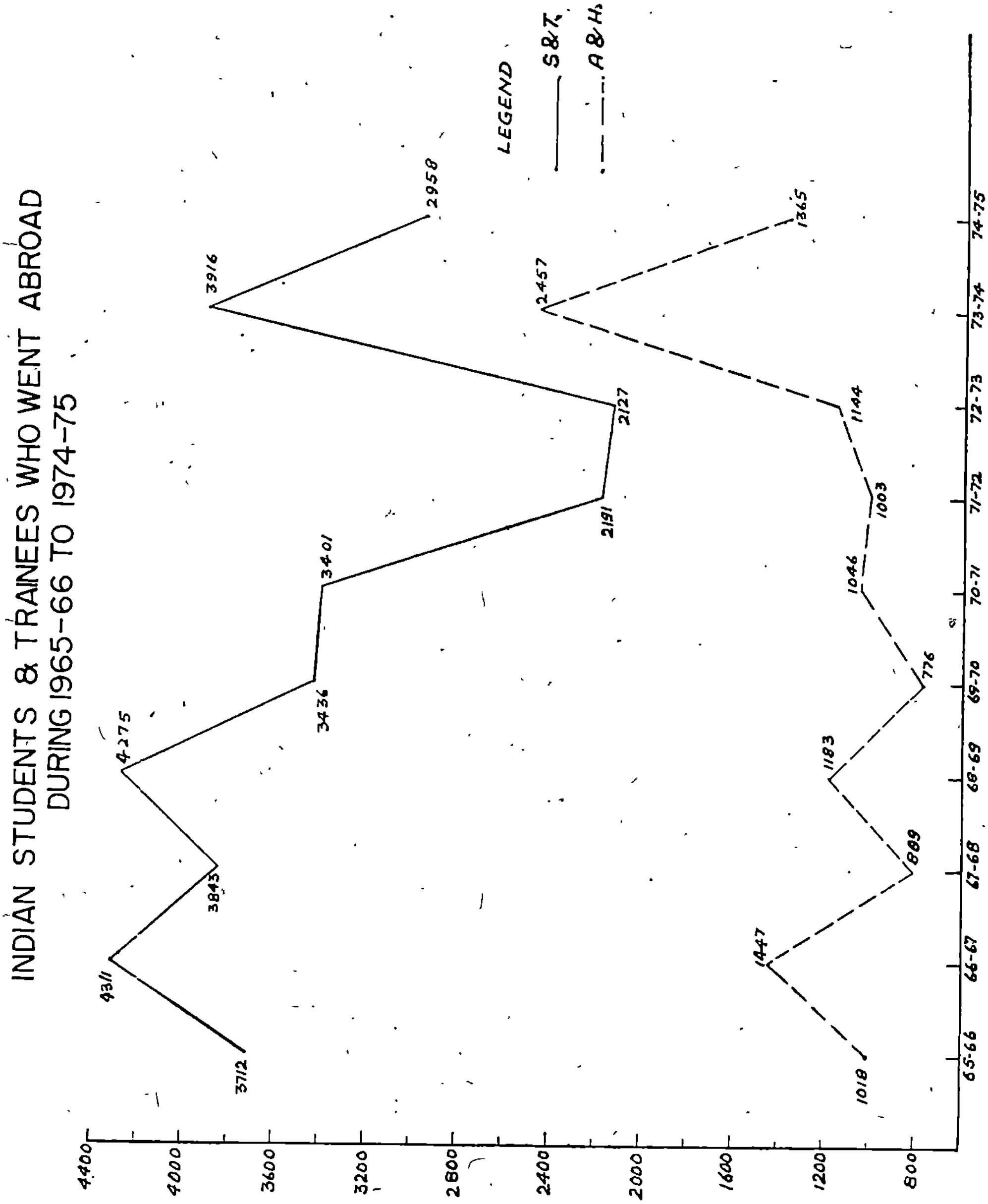
INDIAN STUDENTS & TRAINEES WHO WENT ABROAD DURING 1965-66 TO 1974-75
LEGEND
S&T.
A&H.
4400
4000
3600
3200
2800
2400
2000
1600
1200
800
65-66
66-67
67-68
68-69
69-70
70-71
71-72
72-73
73-74
74-75
3712
4311
3843
4275
3436
3401
2191
2127
3916
2958
1018
1447
889
1183
776
1046
1003
1144
2457
1365

FIG. 1

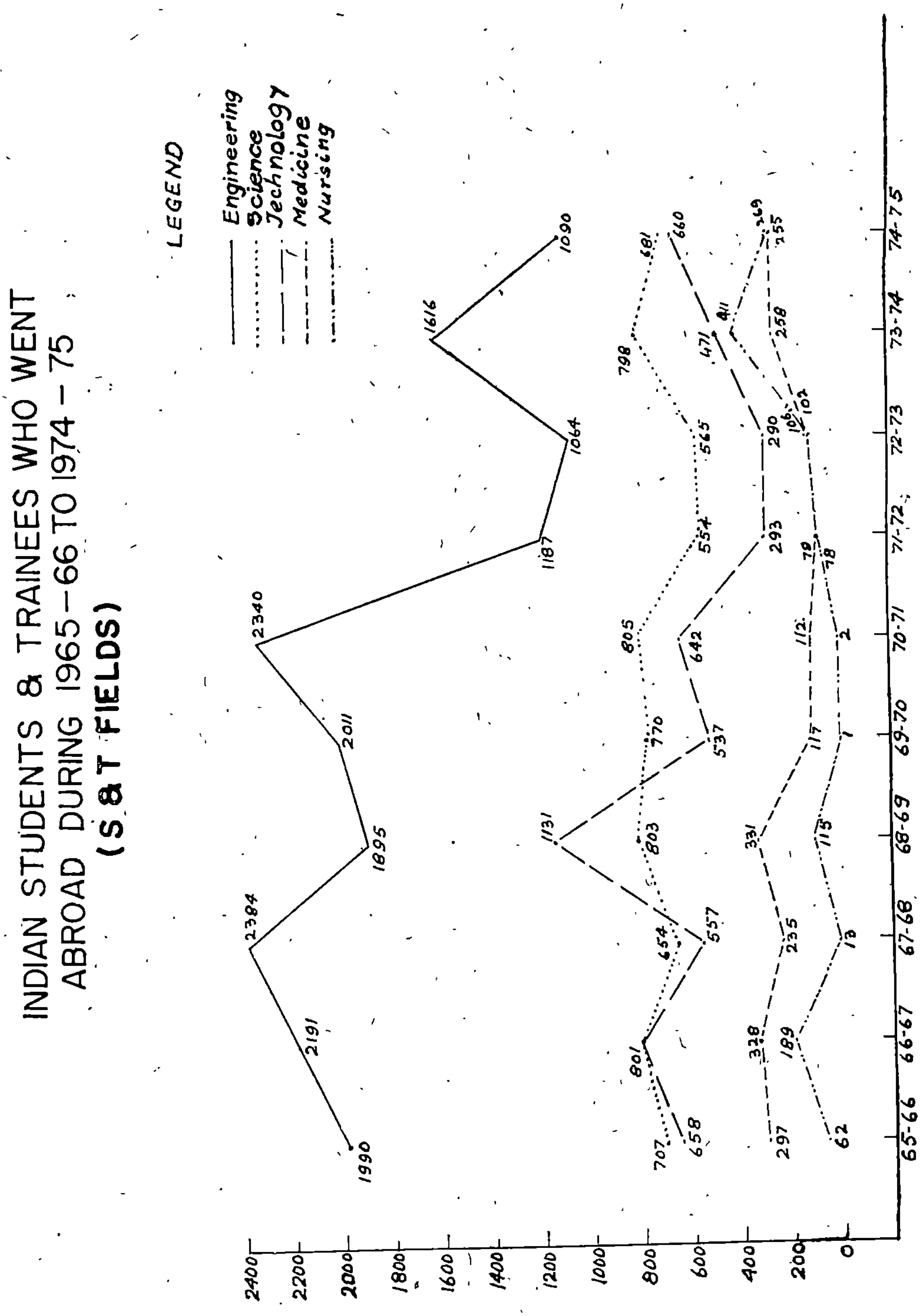
INDIAN STUDENTS & TRAINEES WHO WENT ABROAD DURING 1965–66 TO 1974 – 75
(S & T FIELDS)
LEGEND
Engineering
Science
Technology
Medicine
Nursing
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
65-66
66-67
67-68
68-69
69-70
70-71
71-72
72-73
73-74
74-75
1990
2191
2384
1895
2011
2340
1187
1064
1616
1090
707
801
654
803
770
805
554
565
798
681
658
557
1131
537
642
293
290
471
660
297
328
235
331
117
112
79
106
258
255
62
189
13
115
1
2
78
102
411
269

FIG. 2

The period 1971-72 to 1972-73 is seen as a trough in all cases, except Nursing.

The number of students and trainees in Engineering was the largest among all the categories throughout the period. Broadly the graph shows a declining trend from a maximum of 2,384 in 1967-68 to a lower peak of 1,616 in 1973-74, which was less than the minimum during the first five year period. Students and trainees in Technology, and in Science, exhibit similar trends. The fluctuation in Technology was, however, much larger with a peak of 1,131 in 1968-69 and a minimum of 290 in 1972-73 showing a difference of over 800. In the case of Science, the maximum fluctuation was only about 250, between 805 in 1970-71 and 554 in 1971-72. Broadly it may be said that the number of students and trainees who went abroad in Science has remained more or less steady with minor fluctuations. The number in Technology showed a declining trend since 1968-69 with large fluctuations.

In the case of Medicine and of Nursing, the numbers of students and trainees were less than those in the case of Engineers, Scientists and Technologists. Students and trainees in Medicine who went abroad were larger than those in Nursing between 1965 and 1971. During 1971-73 their numbers were more or less the same. The Nurses were more numerous subsequently. Broadly it may be said that the Medical Personnel showed a declining trend with a broad minimum during the period 1969 to 73 after which they have shown an upward trend. In the case of Nursing personnel, the number of students and trainees who went abroad had fluctuated within about 100 between 1965-66 and 1972-73 after which there was a marked upward swing.

The overall picture in the case of individual S&T fields is one of alternation, with peaks in the years 1966-67, 1968-69, 1970-71 and 1973-74.

Country

Distribution of Indian students and trainees in S&T fields who went abroad by country of study or training is shown in Table 2.

Indian students and trainees in S&T fields who went abroad during 1965-75 were largely concentrated in four countries—USA, UK, West Germany and Canada. Out of 34,660 Indian students and trainees in S&T fields who went abroad during the decade, as many as 20,476 had gone to the USA. They constituted nearly three fifths of the total. United Kingdom and West Germany had attracted one seventh and one twelfth respectively. Canada and "Other West European Countries" had less than 5 per cent each, while France, Japan, USSR, East Germany, and "Other East European Countries" hosted less than 2 per cent each.

A comparison of the number of students and trainees who went to different countries during 1965-70 with those who went during 1970-75 shows that there was a fall of about 2,550 in the case of USA, about 850 in the case of Canada and about 600 in the case of UK. There were marginal increases in the case of West Germany, USSR, and Australia & New Zealand. In other cases, the figures for 1970-75 were slightly less than the corresponding figures for the earlier five year period.

Table 2

COUNTRYWISE DISTRIBUTION

Country of Study or Training	*Students and Trainees who went Abroad*					
	1965-75		*1965-70*		*1970-75*	
	No.	*%.*	*No.*	*%.*	*No.*	*%.*
USA	20,476	59.1	11,513	58.8	8,963	59.4
Canada	1,698	4.9	1,276	6.5	422	2.8
UK	4,973	14.3	2,803	14.3	2,170	14.4
France	649	1.9	369	1.9	280	1.8
West Germany	2,849	8.2	1,357	6.9	1,492	9.9
O W E C	1,536	4.4	878	4.5	658	4.4
USSR	584	1.7	269	1.4	315	2.1
East Germany	202	0.6	156	0.8	46	0.3
O E E C	513	1.5	330	1.7	183	1.2
Japan	632	1.8	380	1.9	252	1.7
A & NZ	300	0.9	136	0.7	164	1.1
Others	248	0.7	110	0.6	138	0.9
Total	*34,660*	*100.0*	*19,577*	*100.0*	*15,083*	*100.0*

O W E C — *Other West European Countries*
O E E C — *Other East European Countries*
A & NZ — *Australia and New Zealand*
Source: Indian Students Going Abroad and Foreign Students in India, 1965-66 to 1974-75, Op. Cit.

In spite of the fall of about 4,500, the relative distribution had remained more or less unchanged except for a fall of about 4% in the case of Canada and an increase of about 3% in the case of West Germany.

Fields of Study or Training

The distribution of Indian students and trainees in different S&T fields who went to various countries during the decade 1965-75 is presented in Table 3.

Out of 6,436 persons who went abroad in the field of Science, nearly 65 per cent had gone to the USA, about 14 per cent to UK, and 7.5 per cent to Canada. These three countries together thus accounted for over 86 per cent of the students and trainees in Science. West Germany had received 3 per cent only.

Table 3

STUDENTS AND TRAINEES IN DIFFERENT S&T FIELDS ACCORDING TO COUNTRY: 1965-75

Country	*Field of Study/Training*													
	Science		*Agriculture*		*Engineering*		*Technology*		*Medicine*		*Nursing*		*Total*	
	No	*%*	*No*	*%*	*No*	*%*	*No*	*%*	*No*	*%*	*No*	*%*	*No*	*%*
USA	4,175	64.9	322	45.7	13,163	74.2	1,657	25.9	1,061	50.1	98	7.9	20,476	59.1
UK	890	13.8	66	9.4	1,694	9.5	1,662	26.0	620	29.3	41	3.3	4,973	14.3
USSR	110	1.7	22	3.1	238	1.3	138	2.2	76	3.6	—	—	584	1.7
Canada	484	7.5	73	10.4	948	5.3	119	1.9	59	2.8	15	1.2	1,698	4.9
France	81	1.3	23	3.3	178	1.0	310	4.8	32	1.5	25	2.0	649	1.9
West Germany	205	3.2	46	6.5	561	3.2	1,016	15.9	48	2.3	973	78.4	2,849	8.2
O W E C	226	3.5	68	9.6	408	2.3	671	10.5	108	5.1	55	4.4	1,536	4.4
East Germany	17	0.3	11	1.6	58	0.3	88	1.4	22	1.0	6	0.5	202	0.6
O E E C	70	1.1	16	2.3	142	0.8	231	3.6	42	2.0	12	1.0	513	1.5
Japan	65	1.0	24	3.4	180	1.0	348	5.4	11	0.5	4	0.3	632	1.8
A. & N Z	74	1.2	15	2.1	111	0.6	67	1.0	25	1.2	8	0.6	300	0.9
Others	39	0.5	19	2.6	77	0.5	94	1.4	14	0.6	5	0.4	248	0.7
Total No.	*6,436*		*705*		*17,758*		*6,401*		*2,118*		*1,242*		*34,660*	
Total %		*100.0*		*100.0*		*100.0*		*100.0*		*100.0*		*100.0*		*100.0*

Source: *Indian Students Going Abroad and Foreign Students in India, 1965-66 to 1974-75, Op. Cit.*

In the field of Agriculture the proportions going to USA and UK were much less and amounted to about 46% and 9% respectively. Canada had attracted 10 per cent. Other countries which received 3 per cent or more of the Indian students and trainees in Agriculture were W. Germany (6.5%), Japan (3.4%), France (3.3%) and USSR (3.1%).

The position in the case of Engineering was more or less similar to that in Science. USA, with 74 per cent, had a slightly higher percentage than in the case of Science. UK with 10 per cent had slightly less than in Science.

In the field of Technology, USA and UK accounted for about 26 per cent each, and West Germany about 16 per cent, of Indian students and trainees. About 10 per cent were in "Other West European Countries".

In Medicine UK with 30% had a much larger share than in other fields. USA accounted for about 50 per cent of Indian students and trainees. In Nursing, however, nearly 80 per cent of the students and trainees had gone to West Germany. The proportion in USA was only 8%. UK had only about 3 per cent.

On the whole, USA had the largest number of Indian students and trainees in the fields of Science, Agriculture, Engineering, and Medicine. USA and UK accounted for almost equal proportions in the field of Technology. West Germany had attracted the maximum number in Nursing.

Countries which had received more than 1,000 Indian students and trainees in individual fields were: (a) USA with 13,163 in Engineering, 4,175 in Science, 1,657 in Technology, and 1,061 in Medicine, (b) UK with 1,694 in Engineering, and 1,662 in Technology and (c) West Germany with 1,016 in Technology. It may be added that about 900 students and trainees in Science had gone to UK, about 950 in Engineering to Canada, and about 975 nurses to West Germany.

State of Domicile

Indian students and trainees in S&T fields who went abroad during 1965-75 according to the State of Domicile in India is presented in Table 4.

Among the Indian states, Maharashtra with 8,127, contributed the maximum number of students and trainees in S&T fields during 1965-75. They constituted 23.4 per cent of the total. Gujarat with 5,024 and Delhi with 3,898 came next contributing 14.5 per cent and 11.3 per cent respectively. These three states together contributed nearly 50 per cent of the total students and trainees who went abroad during the decade.

Other states from which 1,000 or more students and trainees had gone abroad were West Bengal (3,201), Tamil Nadu (2,878), Andhra Pradesh (2,405), Karnataka (1,826) and Kerala (1,789). The four southern states together had contributed nearly 26% of the total.

About eight to ten per cent each hailed from West Bengal and Tamil Nadu, and about 5 to 7 per cent each from Andhra Pradesh, Karnataka, Uttar Pradesh and Kerala. The remaining states and union territories had contributed about 11 per cent of the total.

Table 4

STUDENTS AND TRAINEES FROM DIFFERENT STATES GOING ABROAD

State or Union Territory	*Students and Trainees who went abroad*					
	1965-75		*1965-70*		*1970-75*	
	No	*%*	*No*	*%*	*No*	*%*
AP	2,405	6.9	1,155	5.9	1,250	8.3
Assam	196	0.6	112	0.6	84	0.6
Bihar	836	2.4	455	2.3	381	2.5
Gujarat	5,024	14.5	2,357	12.1	2,667	17.7
Haryana	206	0.6	109	0.6	97	0.6
HP	57	0.5	26	0.1	31	0.2
J & K	78	0.2	60	0.3	18	0.1
Karnataka	1,826	5.3	1,100	5.6	726	4.8
Kerala	1,789	5.2	724	3.7	1,065	7.1
MP	325	0.9	185	0.9	140	0.9
Maharashtra	8,127	23.4	5,304	27.1	2,823	18.7
Orissa	300	0.9	195	1.0	105	0.7
Punjab	941	2.7	688	3.5	253	1.7
Rajasthan	475	1.4	321	1.6	154	1.0
Tamil Nadu	2,878	8.3	1,520	7.8	1,358	9.0
UP	1,854	5.3	1,178	6.0	676	4.5
West Bengal	3,201	9.2	1,959	10.0	1,242	8.2
Delhi	3,898	11.3	2,027	10.4	1,871	12.4
Others	244	0.7	102	0.5	142	1.0
Total	*34,660*	*100.0*	*19,577*	*100.0*	*15,083*	*100.0*

Source: Indian Students Going Abroad and Foreign Students in India, 1965-66 to 1974-75, Op. Cit.

The numbers of students and trainees who had gone abroad during 1970-75 were smaller than the corresponding numbers for 1965-70 in most states. The prominent exceptions were Gujarat and Kerala, each of which contributed about 300 persons more during the second quinquennium. Similarly about 100 persons more went abroad during 1970-75 from Andhra Pradesh than during the previous five years.

States which showed steep falls in the number going abroad during 1970-75 were Maharashtra with a fall of about 2,500, West Bengal about 700, UP about 500, and Karnataka and Punjab with about 400 each.

States and the Fields of Study or Training

Distribution of Indian students and trainees in S&T fields who went abroad during the decade 1965-75 by states of domicile and fields of study or training is shown in Table 5 on facing page.

Out of 6,436 students and trainees in Science, as many as 1,426, constituting about 22 per cent, hailed from Maharashtra. Gujarat with 996 contributed 15.5 per cent, and Delhi with 862 over 13 per cent. These three states together contributed more than half of the total number in Science. The share of West Bengal, Tamil Nadu, UP and AP ranged between 7 and 9 per cent each.

In the field of Agriculture, Andhra Pradesh and Delhi with 107 and 106 students and trainees respectively, accounted for about 15 per cent each. UP and Maharashtra contributed about 12 per cent and 10 per cent respectively.

The position regarding Indian students and trainees in Engineering was similar to that in Science. The maximum number, 4,176 forming 23.5 per cent of the total had gone from Maharashtra. Gujarat and Delhi with 18.5 per cent and 10.5 per cent respectively of the total were the other two major contributing states. These three states together contributed 52.5 per cent of the students and trainees in Engineering.

In the field of Technology, out of a total of 6,401 Indian students and trainees who went abroad during the decade, Maharashtra with 2,136 persons accounted for one-third of the total. West Bengal with 13.8 per cent, Tamil Nadu with 10.6 per cent, and Delhi with 10.5 per cent were the three other leading states. These four states together accounted for 68.3 per cent of the total in the field.

Of the 2,118 Indian students and trainees in the field of Medicine, Delhi contributed the maximum with 386 persons, constituting 18.2 per cent of the total. Maharashtra with about 15 per cent came second. Andhra Pradesh, Gujarat and Tamil Nadu were the three other major contributors, with their shares ranging between 10 and 12 per cent each.

Kerala with 1,042 students and trainees had contributed about 84 per cent of those who went abroad in the field of Nursing. Tamil Nadu was the only other significant contributor. Together, these two states contributed 93 per cent of the total number of 1,242 in the field.

On the whole, it is observed that students and trainees with Maharashtra as the state of domicile, were maximum in the fields of Science, Engineering and Technology. Andhra Pradesh and Delhi topped the list in the field of Agriculture. Delhi's contribution was the largest in the field of Medicine, while Kerala was the dominant state in the field of Nursing.

Discussion

International migration of specialised personnel had assumed alarming proportions during the last decade. Several studies[21-24] have been conducted

Table 5

STUDENTS AND TRAINEES IN DIFFERENT S&T FIELDS BY STATE OF DOMICILE

State of Domicile	*Field of Study or Training*													
	Science		*Agriculture*		*Engineering*		*Technology*		*Medicine*		*Nursing*		*Total*	
	No	*%*	*No*	*%*	*No*	*%*	*No*	*%*	*No*	*%*	*No*	*%*	*No*	*%*
AP	450	7.0	107	15.2	1,210	6.8	367	5.7	243	11.5	28	2.2	2,405	6.9
Assam	60	0.9	5	0.7	93	0.5	22	0.3	15	0.7	1	0.1	196	0.6
Bihar	141	2.2	35	5.0	453	2.6	137	2.2	64	3.0	6	0.5	836	2.4
Gujarat	996	15.5	39	5.5	3,287	18.5	455	7.1	244	11.5	3	0.2	5,024	14.5
Haryana	57	0.9	4	0.6	91	0.5	29	0.5	25	1.2	—	—	206	0.6
HP	11	0.2	16	2.3	20	0.1	3	—	6	0.3	1	0.1	57	0.2
J & K	23	0.4	7	1.0	39	0.2	2	—	7	0.3	—	—	78	0.2
Karnataka	308	4.8	40	5.7	945	5.3	403	6.3	115	5.4	15	1.2	1,826	5.3
Kerala	127	2.0	18	2.6	304	1.7	185	2.9	113	5.3	1,042	83.9	1,789	5.2
MP	49	0.8	11	1.6	197	1.1	30	0.5	35	1.7	3	0.2	325	0.9
Maharashtra	1,426	22.1	67	9.5	4,176	23.5	2,136	33.4	315	14.9	7	0.6	8,127	23.5
Orissa	56	0.9	10	1.4	148	0.8	64	1.0	22	1.0	—	—	300	0.9
Punjab	190	2.9	43	6.1	558	3.2	89	1.4	59	2.8	2	0.2	941	2.7
Rajasthan	98	1.5	22	3.1	281	1.6	48	0.8	25	1.2	1	0.1	475	1.4
Tamil Nadu	470	7.3	48	6.8	1,334	7.5	682	10.6	231	10.9	113	9.1	2,878	8.3
UP	460	7.1	85	12.0	1,029	5.8	171	2.7	109	5.1	—	—	1,854	5.3
WB	580	9.0	39	5.5	1,599	9.0	883	13.8	88	4.2	12	1.0	3,201	9.2
Delhi	862	13.4	106	15.0	1,861	10.5	675	10.5	386	18.2	8	0.6	3,898	11.2
Others	72	1.1	3	0.4	133	0.8	20	0.3	16	0.8	—	—	244	0.7
Total Number	*6,436*		*705*		*17,758*		*6,401*		*2,118*		*1,242*		*34,660*	
%		*100.0*		*100.0*		*100.0*		*100.0*		*100.0*		*100.0*		*100.0*

Source: *Indian Students Going Abroad and Foreign Students in India, 1965-66 to 1974-75, Op. cit.*

by national and international organisations on Brain Drain. The problem continues to be with us, with the difference that part of the outflow from India has got diverted to the OPEC area which joined the ranks of the top echelons in GNP in the recent past.

Indian students and trainees, many of them possessing graduate, post-graduate or even doctorate degrees, especially in scientific and technical fields, form a very significant part of the outflow. The problem of the migrant medical doctor has been causing anxiety. Many have returned to India over the years, but their number abroad is quite considerable. We do not have adequate data regarding various facets of Brain Drain from India.

It appears, according to the data on Indian students and trainees published by the Ministry of Education and Social Welfare, that nearly 47,000 Indian students and trainees may have gone abroad during 1965-75, of whom about 35,000 constituting nearly three-fourths belonged to Scientific and Technical (S&T) fields. Students and Trainees in Engineering numbered about 18,000, in Science and Technology, about 6,500 each, in medicine over 2,000, in Nursing over 1,000, and in Agriculture slightly less.

The number who went abroad in S&T fields during the first quinquennium was significantly larger than that in the second, except in the case of nursing. All the S&T fields showed a peak near 1968-69 Broadly it may be said that there is a gradual decline in the number of S&T personnel going abroad more recently except in the case of medical personnel. The reason for this trend appears to need examination. To what extent if any was the peak in 1968-69 connected with the unemployment crisis in 1968?

The countries which had attracted large numbers of Indian students and trainees in S&T fields were USA, UK, and West Germany. USA had hosted three-fifths, UK one-seventh, and West Germany one-twelfth. Despite a fall of about 4,500 during the second quinquennium, the relative distribution among the countries had remained more or less the same, but for an increase of about 3% in respect of West Germany.

USA had the largest number of Indian students and trainees in the field of Science, Agriculture, Engineering and Medicine. USA and UK accounted for almost equal proportions in Technology. West Germany hosted the maximum percentage in Nursing. Over 8,000 of the students and trainees in S&T fields belonged to Maharashtra, about 5,000 to Gujarat, 4,000 to Delhi, and over 1,500 each to West Bengal, Tamil Nadu, Andhra Pradesh, Karnataka and Kerala. Most of the states, except Gujarat and Kerala, sent smaller numbers during 1970-75 compared to the previous five-year period. Students and trainees from Maharashtra were maximum in the fields of Science, Engineering and Technology. Andhra Pradesh and Delhi topped the list in the field of Agriculture. Delhi had the lead in Medicine, and Kerala was predominant in Nursing.

It is not possible from the data to identify the character and content of the courses undertaken, the duration of stay abroad, and the rate of return. A detailed examination of all available data about students and trainees from

India who had gone abroad appears necessary to assess the profits and losses involved in study and training abroad.

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Foreign-Aided IIT Education

SHEILU SREENIVASAN

The Indian Institutes of Technology represent a most interesting cross-national phenomena of foreign aid to India. By 1961 all the five IITs had become recipients of aid from four different countries and from the UNESCO. This paper seeks to examine the role of foreign assistance so provided, in terms of the functions performed by the IITs.

The central concept of assistance is that of the purposive transfer of technical education pattern. However, a number of foreign educational patterns seemed to have impressed the Indian ruling classes. Irrespective of the nature of society they were serving, a number of technical education systems were found good, somewhat in an abstract sense. Thus even transcending ideological barriers, assistance of four countries and the UNESCO were secured for the IITs. It is a sociological fact that every technological education system reflects the images and goals of that society in which it serves.[1] The very idea of allowing the foreign countries to partake in the shaping of the national pattern demonstrates an ad hoc readiness to adopt different patterns pertaining to differing goal structures. At any point in time the form and content of education will always carry social biases. As stated by Marx, "the class that has the means of material production in its control, controls at the same time the means of intellectual production".[2] This is not to say that there is no fundamental rudimentary technology that is compatible with different social arrangements. The same tools can surely be used within the context of quite different relations of production, for the relations themselves are not built into the instruments. Surely there are no capitalist looms and no socialist looms, but simply looms. Yet to talk of technology as an independent moving force is incorrect, because both the societies may employ common technical systems but use them in different ways and turn them to different ends. Local generation is implicit in the very definition of technology,[3] minus which, any import or transfer is likely to be irrelevant to the social context, as we shall see in our analysis.

Objectives of Aid

The giving and taking of aid to IITs, at the conceptual level, is erected on a complicated edifice of foreign policy objective, the subtlety of which could be understood only in a world-wide perspective of structural relations between nations and this has been delineated by us elsewhere.[4] To be brief, on the donor's side, aid to IITs is proposed most significantly, during the third stage in the development of the concept of foreign aid—the stage of "human-capital investment". With the development of productivity as the key to growth and to social stability through higher wages, it was only one step to seeing the investment in education or public health or medical care as a productivity rising investment in "human capital".[5] This perspective saw Education as integral to *generalised* modernisation approach based on a more education (as more health) and thus a more efficient, cheaper and flexible world-wide labour force. More specifically, aid to IITs comes when the term 'institution-building' was coined as a palliative to the disappointing experiences with 'limited' impact that the technical assistance of earlier years could produce. It was argued that neither capital investments nor technical changes alone could bring about the desired change. To have a lasting impact, aid was to concern itself deeply with the social, political, cultural and total economic context in which it operates overseas.[6] In other words, the 'social-resource development' was to be undertaken along with 'institution-building' by influencing the socio-cultural environment necessary for ensuring the continuity of aid projects. An AID report puts forth the American objectives very clearly: "a permeation of the whole Indian academic community by American thought, behaviors and general approach to scientific, technological and also politico-economic advancement....The means for achieving that permeation is shoulder to shoulder association and demonstration—the personal imparting of attitudes and information to Indians by Americans both in India and at American institutions of higher learning".[7] But as Thomas Eiseman confesses, "the participation of the norm setting educational system is subtle. The introduction of alien patterns is accomplished not by fiat but by persuasion".[8] The objectives of other donors of IITs may not be considered as being very different.

On the Indian side, the chronology in the history of the establishment of the five IITs supremely demonstrates the various facets in the ruling classes' dilemma in accepting aid. It establishes how ultimately their attitude to educational aid is derived from their position in the social structure, where any factor that contributes to their relative position positively, comes to be largely acceptable. Thus in spite of being constantly aware of the political overtones involved, they make out a case for the seeming neutral character of technical assistance. The advantages accruing to their present position in the social structure by "selling" this idea to the innocent public are numerous. They go ahead in accepting aid to IITs, at the same time involving ideological competitors in the grand collaboration project in the field of technological education. Officially there seems to be, in broad terms, two schools of thought regarding the role and function of the IITs: the first expects the IITs to produce technically oriented managers and a technological elite; the second, reflecting a slight hang-over from the Gandhian past, expects to develop engineers who could significantly generate and increase at grass root level, actual industrial production or start small-scale industry.

Functions

Against the backdrop of the explicitly stated purposes of foreign assistance to the IITs, we will now proceed to examine the functions served by them. Sociological analysis usually assigns two primary functions (both shared with other institutions) to the educational institutions of a society (a) socialisation through transmission of cultural heritage, and (b) the instrumental function of channeling its members into positions in the existing structure.

Socialisation

To consider first the socialisation function, we will discuss (a) the part played by the central curricular content, and (b) the part played by extra-curricular, i.e. the socio-cultural environment, in the socialisation of students joining the IITs.

(a) If there is any single issue over which there is unanimous discontent within the campuses, it is that of the curriculum. The Seminar on 'Quality Improvement in Engineering Education' organised by all the IITs in 1976 gave the most authentic proof of the discontent. It represented a critical self-evaluation of their past performance. By making curriculum the dominant theme for critical analysis, the IITs seemed to have passed judgment on the handiwork of foreign aid. Out of a total of 32 speakers at the Seminar, almost every one made a reference to an excessive theoretical bias and to the absence of a practical orientation, with no relevance to the community outside. Many of them specifically pointed out that the curriculum had been just copied from institutions abroad, and therefore, they bore no relevance to the Indian situation.

Adherence to the British pattern of teaching conventional engineering techniques and practices is supposed to be at the basis of the much complained academic bias. This factor is said to have overlooked the importance of: '(1) teaching of engineering sciences, mathematics, materials science, methodology of design, instrumentation etc., (2) developing a type of laboratory experience where students would get a better understanding of experimental approach to problems, instead of skills in routine measurements, testing and verification of law'.[9] Regarding the foreign orientation of the curricular content, we quote the authentic views of Dr. V.C. Kulandaiswamy, Director of Technical Education, Tamil Nadu: "It has to be conceded that for a long time we have made use of a curriculum mainly based on what is obtaining in advanced countries, as the ideal to be realised...we have been inclined to define quality on the basis of comparison with international standards. It is necessary to inquire into the validity of this approach. While comparison with international standards may be in order, in courses that are mostly academic in nature, it will not be that valid in applied fields like engineering and technology....Every area of knowledge has a universal component. But in applied areas there is also the local component which is very important. With the strides made in engineering and technology in the last few years...*it is no longer a question of making use of a particular development that might have taken place in some part of the world*....The position today is one of defining the problem and finding that solution which will be suitable for the society under consideration....It is the choice of the relevant means, the method, the process or any other tool that is meant by the term 'appropriate technology'."[10]

In another criticism of the IIT syllabi, we have the following: "the syllabi of the IITs include courses taken straight from universities abroad, particularly from U.S., without adapting them to suit our requirements. These courses are highly theoretical and do not lend themselves to exploitation for some time to come in a developing country like ours. Courses such as Gas Dynamics, Complex Variables Theory, Modern Algebra and other advanced topics in Mathematics, and similar courses in other fields of Physical and Applied Sciences are a far cry from the jobs actually performed by a number of graduates from these institutions. There is a distinct lack of demand in Indian industry for the specialised skills imparted by these institutes, as a result of which the graduates have to rest content with jobs totally unrelated to their training or go abroad...."[11] The above mentioned are some of the deficiencies of the curriculum pointed out by the faculty. Student discontent is no less voiceferous, as was recorded in another research finding.[12]

(b) Coming to the impact of foreign assistance on the socio-cultural environment of the IITs, we find that foreign assistance, in the measure to which it is concentrated in these five institutes within the larger context of technical education in the country, generates an impregnable condition of eliticism. The location of these institutes in the metropolitan centres sets in motion, a chain-reaction, tending towards elitist predominance. Starting with the catchment area, the urban bias has resulted in recruitment of students mostly from higher income groups.[13] Successful entrants to an IIT are placed in one of the engineering disciplines, as per the order on the merit list, indicating their performance in the Joint Entrance Examination (JEE). Success at JEE is again the result of better educational background and higher parental income. Thus, as A.D. King put it "the streaming of students into various engineering disciplines, ostensibly according to intellectual attainment as measured in JEE, but effectively, also according to educational and social class origin would seem to have very adverse effects, reinforcing both the deprivations of the economically less privileged as well as the advantages of the more privileged".[14]

Speaking of the other factors in the socio-cultural environment, mention must be made of the life styles that segregate the IIT students as 'elites' (on the social side) from the general stream of engineering students in various other technical colleges in the country. Within the elite campuses again, adherence to these life styles is a factor segregating the 'affluent' group belonging to the metropolis proper and the 'regional' group hailing from nearby regions. Says a senior faculty member, "the sudden exposure to the pattern of life obtaining in the IIT campuses provides a certain shock...while many come out of it unscathed, in some, the dents produced stay on. For students from weaker sections, the consequences are serious".[15] Director A.K. De, of Bombay IIT observed that the SC/ST students found it difficult to assimilate into the texture and culture of the general students.[16] Another factor contributing to the elite socialisation is the use of educational media typically characteristic of foreign models, viz. the use of 'discussion method', semester system, internal evaluation, audio-visual teaching aids and the most important of all, sophisticated tools and equipment including computer systems.

The cumulative impact of the extra-curricular content of the IIT education is a process of elite socialisation unmistakably owing alleginece to foreign educational patterns transferred to IIT campuses. The importance attached to this socialisation-process by the donor country is interesting:[17] the purposive transfer of technological skills and knowledge through training is a process which is conceived of as operating at two levels. At the individual level, it involves the acquisition of a body of knowledge and techniques necessary for preparing critical occupational roles. A more complex expect of the process at this level is the 'resocialisation' of those undergoing training. It is considered essential that the values and motives of the trainees must be articulated closely with the performance of their critical work roles. Implicit in the idea of foreign study or study based on the foreign models, is the view that through an exposure to the values, norms and practices of economically advanced societies, the trainees may come in time to change their perspectives on their society, their work roles or themselves in ways which will strengthen their later effectiveness as change agents. The process of 'enskilling people' from UDCs thus required a dual focus: (a) on substantive skills, and (b) on the realm of attitudes and values which can shape future conduct.

The thrust of the training as is obtained in the IITs is to be seen as having both a technical and a social aspect, combining with the transfer of specific occupational techniques and skills, a grasp of the wider social system. The latter involves the perception of the organisational setting in which work roles are performed. This setting, for the foreign models that are serving as references to the IITs, comprises of the large-scale technologically intensive and sophisticated industry, based on the machine-using economy, and relying heavily on ever greater manpower from the white-collar world. This setting, *to which alone* the technological education of the foreign model owes its social relevance, has its counterpart in India, in the industrial pockets of the metropolis, barely catering to one-tenth of the population.

The evidence to this limited relevance is borne out by the occupational roles taken up by the IIT graduates. Our study of their occupational placements and occupational attitudes, reveal that their contributions are focussed around not the most socially-productive manufacturing or innovative technology, for which they were supposed to have been trained, but around non-technical and administrative positions in the industrial sector within the country. Equally disturbing is their contributions to the technology shelves of the developed countries (DCs). Before going into this analysis, we shall present the mildly differing patterns of technological education found at the IITs, for they have a telling effect on occupational preferences.

Differences in Socialisation

The IIT-Bombay attaches a zealous importance to specialised practical training as opposed to a broad-based scientific course. Proto-type analysis based on the actual life structures, on a 1:1 model in the scale effect, became a distinguishing feature of the courses at IIT-Bombay. Therefore, instrumentation facilities were somewhat neglected. In a way, training with limited instrumentation during the study period perhaps prepares the students better in an underdeveloped country (UDC) like India, where such aids are not likely to be available at places of employment. But proto-type analysis is supposed to be an almost obsolete method in technical education. Secondly, it is said that the machinery and equipment supplied by Russia are either worn out, secondhand or obsolete. As a result of which, an entire building or a portion of it, is said to be perpetually locked up, as containing only old junk. The sand-blasting machine is an example. In India, the Russians are, however, known for supplying equipment and spare parts with no consideration to actual requirements.[18] The value of such equipment is also boosted up by the Russians.[19] One particular Testing Machine is known to be costing more and having much lesser facilities. Overall maintenance has been terribly problematic due to the lack of supply of the spare parts, the Russian language of the literature on spare parts and also the lack of built-in mechanisms in the machines, to regulate fluctuations in power supply. To top it all, the Russian 'experts' who were despatched to solve problems had degraded from first class technical personnel of the initial collaboration years to mediocre and third class technicians in the later phases.

What appears as stark contrast to the Russian aided IIT-Bombay is the German-aided IIT, at Madras. It has characteristically come to stand for a rigorously practical training-oriented course, very much like what is found in West Germany. The German concept of raising high quality middle-level-shop-floor technicians is said to have found its application here, with the emphasis on experimental method and practical training. In contrast to the Russian insistence on proto-type models, the Germans seem to be quite content with laboratory measurements. The IIT-Madras, therefore, is well equipped with instrumentation facilities and excellent maintenance conditions, like provision of three sets of spare parts, along with good service manuals and their English translations. The provision of first-grade equipment, training and service facilities under an enormous budget of Rs. 620 lakhs—the largest ever received by a single IIT—is meaningful in the context of Germany's international relations. Driven by the exigencies of capitalist competition, West Germany had realised the imperative of exploiting the markets of the UDCs. In India, German aid had steadily increased from 1958 onwards upto 1961, and it is during this period also that the IIT-Madras became the biggest aid recipient. West Germany's assistance to IIT-Madras definitely represents its efforts to even outsmart the other donors of IITs. Though one appreciates, on a comparative basis, the education at the IIT-Madras, in terms of overall social functions, it is not much different from other IITs.

America's IIT-Kanpur has not only outstripped the early arrivers in fame and leadership in the usual American style, but as the most prestigious demonstration centre, has carved a niche for itself in the entire of Asia. The courses obtained at IIT-Kanpur have a characteristic quality. They are supposed to embody the ideal combination of the conceptual model and the specialist-practical model. They are also acclaimed for their inter-disciplinary flexibility and the adoption of 'Systems Approach'. It has the most sought-after combination of Operations Research and Systems Engineering. However it is the American emphasis on Management and Behavioural Sciences that has increased the market value of IIT-Kanpur graduates. Training in modern computer programming, 'PERT', 'CPM' and other management methods find immediate appreciation in large industrial concerns, where the graduates aspirations are hooked. Though the other IITs also have similar programmes, the emphases vary. It is the IIT-Kanpur installed with the most sophisticated instrumentation system, elaborate graphical evaluation models and precision measurements, that is adjudged the elite among elites. But the utility of such a highly sophisticated and instrument-based training, that too, at a high per-student cost, to the basic material needs of the larger population in India, has to be evaluated. One must also evaluate the necessity and role of a management emphasis in a purely technical field as engineering and technology. IIT-Kanpur clearly aims at making manager-executives out of those who would otherwise remain only pure technologists or engineers after graduation. In view of this trend gradually percolating into other campuses which have also started management programmes in a big way, we will have to examine the implications of this sort of a manpower planning before analysing the contributory functions of the IIT graduates.

Continued employment of engineers in jobs which do not demand engineering skills, has been one of the three aspects of malutilisation of engineers, recognised by the Working Group of Technical and Vocational Training, 1959 (Govt. of India), the Perspective Plan (*Fourth Plan: A Draft Outline, p. 117*) and by an intensive study of 'Industrial Growth in South India'.[20] It was emphatically made known that "*engineers were being wasted through* *allocation of jobs of a quasi-engineering nature".* More dismal is the trend of pure management institutes opting for more and more *technically* qualified students. Even granting that scientific or national administration is an important prerequisite for modernisation, it is not clear why technical institutions should join the race: the IITs specially, were established to advance the frontiers of fundamental knowledge in various fields, according to a Government Report.[21] The incorporation of modern management education into the IIT curriculum is a clear reflection of similar changes in the foreign educational pattern, especially the American. But in America and other DCs mass consumption patterns warrant the practice of management techniques, whose main objective is profit making in an intensely competitive market. The relevance of management education apart, it is evidently known that such an education fosters a certain value system whose characteristic feature is alienation.[22] An ubiquitous snobbery sets this crowd apart from the general culture and the larger society.

The IIT-Kanpur with its prominent behaviouralistic orientation has won approbation as the 'Reference model' for engineering education in India. As a result, many of the characteristics of the IIT-Kanpur have come to be integrated into the Indian engineering education.[23] Even the IITs at Delhi and Kharagpur are largely following the example of IIT-Kanpur. In addition, American assistance, in sharp contrast to assistance of other IIT-donors, encompasses a wider field in technological education, and in fact, the entire field of education. The sheer magnitude of American assistance to Indian education, has brought about not only a recognition of its primacy in the field, but also an infusion of certain informal rights in the running of the technical education system. The initial distinction between direction (setting of goals) and administration (implementation of the agreed plan—America's role) tends to disappear in an institutionalised assistance network,[24] as is found in the IITs. There arises almost spontaneously certain ad hoc directive-administrative discharges which eventually strip the local decision-making bodies of their power to influence the formulation of policy regarding technological education.[25] Witness for example, the sudden awakening of the ruling classes in India to decisively churn the IIT system towards *'relevant'* research and study, implying thereby, that all these years, consciously or unconsciously the policy has been drifting away from relevancy. More concretely, 'relevancy' was adopted as one of the two objectives in the Fifth Plan for engineering and technological education.[26] It has been pointed out how the gradual disappearance of distinctions between the recipient's role and the donor's role leads to the rotation of the entire university system towards the foreign model. "Formulation of policy is latently or spontaneously transferred to a foreign system of higher education in the originating country".[27] There has been a formal and informal permeation of the Indian technological education by foreign, chiefly, American educational pattern.

Complaints of blatant imperialist penetration into the campuses of IIT-Delhi, IIT-Kanpur and IIT-Madras have been made in the Parliament many times between 1968 and 1973. The MPs who demanded a probe, said that 'definite international links' were evident in the irregularities at Kanpur and Madras. In 1972 Kanpur became the scene of much trouble and the main charge against the management was its refusal to recognise against evidence, the fact that "the American collaborators tried to inject certain American institutions in the system which have been surviving without any integration with educational and social environments of the country".[28] Attention was also brought to certain research projects in that Institute that served American defence interests and which were harmful to India.

Apart from subtle influence through curriculum and the socio-cultural environment, the most obvious media is the massive equipment and machinery that adorn each of the five IIT-workshops. As installations for demonstration purposes, they are not utilised for production processes. Training under particular machine types is definitely known to be restricting the graduates occupational preference. Students from IIT-Madras for example, show an obvious preference for jobs in firms that have a German collaboration, or at least possess German machine types. It is natural that when the graduates occupy high posts in firms, they feel inclined to buy machinery to which they have been "socialised".

Instrumental Function

The total impact of foreign-assistance to IITs can be fully evaluated only against the societal functions subserved by this branch of specialised training. An analysis of the utilisation pattern of the graduate engineers and technologists from the five IITs is expected to reflect, among other things, the trend in demand for such personnel, the types and sectors of activities which they enter and the ability and capacity of the economy to utilise them properly.

Based on the findings of three research studies[29] we wish to point out the following:

(1) About 25% of the IIT graduates leave the country every year[30] and they are all mostly first divisioners. Apart from the physical and social costs of brain drain that are usually computed, an important dimension of the loss is the 'reverse transfer of technology' through the migration of such high quality manpower to the DCs.[31] The loss of the potential for innovative technology embodied in every IIT graduate who migrates, is too severe a defeat of the very purpose of high quality technological education.

(2) About 3% of the graduates are unemployed. Unemployment is faced by those specialists who are predominantly employable by the public sector—Civil engineers, Mining engineers and Geologists.

(3) About 7% of the graduates are 'trainees', which highlights the fact that even after such an intensive training course the graduates still lack practical training.

(4) Seventy-five per cent of the graduates are in regular employment. The proportion taking up employment in Design and Survey work and Manufacturing activity show an unmistakable tendency to decline over the period under study, while other categories like Management, Transport and Com-

munication, show an increase. Even at the level of aspirations, it was found that as many as 52% show an open preference for careers in administration and management. As A.D. King puts it, "if Manufacturing is considered as a Secondary sector in economic activity, actually concerned with the production of new goods, then, administration and management, research, sales, maintenance could all possibly be seen as a tertiary or service-sector activities to the engineering industry. If this is the case, then it indicates that approximately 20% graduates propose careers in immediate production areas and approximately 80% in service sectors of the engineering industry".[32] At the all-India level, over the last two decades, non-technical and non-professional activities are gaining momentum and industrial intake of science and post graduates is dwindling.[33] The recent census reveals that "nearly 60% of the degree level engineers and 70% of the diploma holders are in services other than industrial or teaching".[34] Interestingly, not a very different position prevails in the DCs. Few authors like K.N. Kabra contend that it is because of such trends in the DCs, notably USA that similar trends are emerging in UDCs like India.[35] As is noted elsewhere, "the quantity and relative distribution of different types of professions in a developed country and the need to produce similar proportions above all in the *technological* area, in a given non-developed country in accordance with the nature of its exploitable resources, constitutes both the image and the goal (of foreign assistance). The units which receive international assistance are those considered strategic for this purpose (faculties or schools of economics, business administration, engineering, veterinary sciences, agronomy, technology etc".[36]

Apart from the drifting of graduates to non-technical positions, we also find that teaching as a category of employment activity, is losing popularity. Intended as a premier teaching institution, IITs responsibility to raise the quality of teaching in the technical field was more or less implicit. Rather than the IITs showing the lead in innovative methods in teaching and curricular reformation, we have certain private institutions, like the BIT of Pilani, in the forefront.

(5) The private sector tends to be the beneficiary of the bulkiest part of the IIT graduate employment—a factor whose full dimensions would not emerge, unless we know how many firms in this sector are under foreign collaboration.

Evaluation

The foreign-assisted IIT education, evaluated against its own science policy goals presents a dismal picture, as they appear to be working at cross purposes. The first goal of strengthening institutional facilities has been to a certain extent achieved with the help of foreign assistance. But in so doing, the second goal of achieving self-reliance appears to have been sacrificed. If self-reliance means indigenous generation of technological capability, then foreign assistance has not paved the way.

In terms of generation of research capability, the IITs have yet to make a dent in the prevailing situation when India continues to borrow 99% of its knowhow from abroad.[37] The relative contribution of indigenous knowhow to the total value of industrial production has increased only from one-twentieth of one per cent in 1961-62 to one-eleventh of one per cent in 1968-69.[38] Apart from a poor record of total research capability, it is doubtful whether expertise in at least technical skills have been promoted. Today, India's dependency is as much for non-patented technical skills as for patented knowhow. In view of the reported fact that 'the Government agencies have not acquired even the commercial and technical sophistication in buying knowhow,[39] it is not at all clear in what way the socalled high quality technical training of the IITs has benefited the society and the Government, which have designated them as 'Institutes of National Importance'.

What is clear, however, is the unilateral direction in the trend of education fostered at the IITs—a direction which is pointing towards the needs of the DCs, largely irrelevant to the immediate Developmental needs of India. We shall explain. We have seen that the high quality technical training programme has resulted in overwhelming proportions of the graduates taking up jobs which are quasi-engineering and/or non-technical in nature. Granted the remaining proportion takes up *technical* positions in industry. But there is a series of factors which conspire against their technical contributions accruing to the systematic alleviation of the problems of the majority in the country. The first of these is the frequent preference shown by the graduates for technical work under certain machine types to which they *have been specialised* at their respective IITs. Such machines are mostly found in the collaboration sector, whose main forte has been promotion of technological dependence. The contributions of the graduates serving this sector have therefore to be discounted. Of the proportion which takes up jobs in manufacturing, the technical contributions of those serving the purely export-oriented industries, have to be carefully evaluated. Research findings of the latter's impact on integrated development process are not very encouraging, specially in view of their propensity to perpetuate technological dependence.[40] Of the contributions of the IIT graduates to the *technical* side of the local private sector, which is relatively minimal considering the total out turn of graduates, much evaluation depends upon how capable Private Capitalism is in solving the problem of providing even the basic needs of the masses, leave alone their rights to equality and freedom. The graduates' contributions to the Public Sector Undertakings, likewise, will be directly beneficial to the masses, if the latter demonstrates a total orientation to social welfare, by harnessing the profit motive to social needs.[41] One cannot also over estimate the progressive significance of state-capitalist forms. If public sector enterprises are under effective control of the big bourgeoisie and high paid bureaucrats, they would become the instruments of the richest and most powerful elements in society who would use them against the overwhelming majority of the people. Of the proportion which has migrated abroad, needless to conclude their total non-utility to India. What is worse, they do contribute to the generation of technology, which is purchased by their own country at exhorbitant costs.

Over-riding these factors which almost nullify the possibilities of IIT graduates' functional contributions accruing to real Development in India, is the gigantic hurdle of the techno-economic strategy adopted by the ruling classes, with minimal, incremental structural-institutional changes and the continued operation of the economy as an appendage of the world capitalist system. Within this framework, with the type of education obtained in the IITs, one cannot expect the graduates to be able to critically sense the real limitations of the economic order and to effectively extricate themselves from forces beyond their personal control, in order to genuinely work for Development. So, whether the graduates opt to migrate abroad or stay in India (and join foreign firms, or join the Indian industry which itself operates within the limitations of the international market structure) where even the larger structure is struggling against the oppressions of the imperialist countries at the Centre, the direction of their contribution is almost unilateral-pointing towards the Centre.

The most interesting revelation is the fact that the socialist donor has also not fostered a qualitatively better education as one might normally expect. Though USSR verbally advocates the public sector oriented techno-economic order based on the "socialised" means of production, it has not helped to produce a technological education system that will be specifically suited to the above order. The graduates from the Russian-aided IIT-Bombay do not even show any preference for jobs in the public sector; on the contrary, it is IIT-Bombay that sends the largest number to the private sector, as compared to the other IITs. We have thus no grounds for considering influences from capitalist countries on the one hand and influences from Soviet Russia on the other, as being different in their impact on India's development. True, the graduates show open preferences for employment in firms that have imported machinery from the respective donor countries which have assisted their IIT; IIT graduates also show qualitative difference in the type of training; but none of the donors have been instrumental in developing a type of technological education that will be best suited to Indian development. Of course, within the present day structure of unequal relations prevailing between the DCs and the UDCs, such a form of assistance cannot be expected.

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Expenditure on University Education : A Unit Cost Analysis

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University education has been given an important place compared to other types and stages of education in our country. In spite of the paucity of funds for education in the Centre and State budgets, university education is consuming a considerable portion of the National Income. The expansion of universities during the past decade is more significant quantitatively rather than qualitatively. The Education Commission of 1964-66 felt this pinch and observed as, "the general feeling in India that the situation in higher education is unsatisfactory and even alarming in some ways; that the general standards have been falling and that rapid expansion has resulted in lowering quality".[1] The Education Ministers' Annual Report for 1973-74 for instance highlighted the fact by saying that the total student enrollment in universities rose to nearly 3.86 million in 1973-74, more than thrice the number at the beginning of the last decade.[2]

In view of this, our Economists and Educationists have been arguing for a restatement of the objectives of our higher education and re-organisation of the system. Many Committees and Commissions have been appointed to suggest various measures to improve the efficiency and quality of education in our country. But, much has been done on paper than in practice. Another important drawback in our educational system is the lack of information on the economic aspects of education. This has created many problems for researchers to study the cost-effectiveness of education. In addition to this, the various concepts in the Economics of Education are not properly defined and they are ambiguously used. In spite of these problems, some writers have estimated the rates of return and also the costs of education at different stages in our country. However, these studies have been undertaken under certain limitations and none of these studies have estimated the comprehensive cost of education nor provided the theory of unit cost. Taking these things into account, this study is addressed itself mainly on the following aspects.

Objectives

(1) To define and explain the scope of the concepts used in educational cost studies with a background of the theory of unit cost. (2) To examine the different unit costs of university education. (3) To estimate the social and private costs of university education. (4) To compare the costs of education between the colleges in Andhra University. (5) To find out the effect of students' socio-economic background on their expenditure on education. (6) To estimate the comprehensive or total costs of university education.

Methodology

The study covers all the students of the two University Colleges of Arts, Commerce and Law and Science and Technology of Andhra University. The private expenditure of the students is collected by using the sampling method. The students in each department are divided into two groups as hostlers and day scholars and selected 10 per cent of thes tudents in each group by the method of simple random sampling. A five page schedule was used for this purpose. The social expenditure (university) was obtained from the official publications, annual reports, budgets, calendar, etc.

All the students of the two colleges were studied without any distinction between final and previous years. We have taken this view because the students belonging to both previous and final year are living in a common atmosphere. The hostel bill of the previous and final year students is same and the maintenance and other habits are also found to be similar in our pre-test of the questionnaire. The fees and certain academic related items of expenditure are not same between the previous and final year students. But, the expenditure on these items constitute a negligible amount in the total expenditure as such we have neglected to analyse year-wise expenditure of the students. The monthly expenditure on different items was ascertained from the students by taking into account the last four months monthly average.

The average public cost per student is estimated on the basis of the university budget for the year 1976-77. In this part, only the expenditure that is met by the university and government is only examined. Different units have been selected to estimate the cost per student by unit such as teaching cost per student, administration cost per student, etc. The University has a number of affiliated colleges and has been incurring expenditure on these institutions also. But, in this study the expenditure which is relevant to the post-graduates in the university colleges has been considered and the expenditure used for affiliated colleges and research has been taken care of. On certain items like examiners' remuneration which contain both the post-graduate and undergraduate examiners' remuneration, a certain percentage on the basis of the detailed budget has been obtained separately for post-graduate and undergraduate students. The same percentage has been used to divide the common expenditures between post-graduate students and undergraduate students. In the case of university colleges, the expenditure that is exclusively used for the different colleges is estimated in the first instance and the costs incurred on common items like administration. Auxiliary services, etc., is estimated with the help of the following formula and later both the costs are added together.

$$\frac{Tc \; cm \times \frac{n_i}{n_u}}{N_i}$$

where T_c cm is total common cost,

n_i is strength of each class,

n_u is total strength of university colleges.

The sum of the exclusive amount and the obtained amount from the common expenditure give us the total figure for each unit. The capital cost for the year 1976-77 is obtained by computing the capital outlay provided for the year at 11.5 per cent of the return on capital investment for the year 1975-76 and the depreciation charges on capital provided for the year has been added to the computed amount to obtain the total capital cost. The receipts of the University other than the Government grants and transfers have been deducted from the total since these amounts are contirbuted by the students and the same is included in their private expenditure. In order to avoid double counting all precautions have been taken (such as deducting the rent of hostel buildings, examination and tuition fee, etc., which are collected from the students from the total public cost since they are added in their private expenditure).

Definition of Concepts: In this study a number of concepts are used to explain the details of public and private expenditure on education. The meaning and scope of the concepts in most cases are derived from the popular usage in economics and sometimes the layman idea is also used. The following are some of the concepts:

Teaching Cost: The teaching cost means the cost per student incurred on teachers' salaries. This cost takes into account the total salaries of the teachers and their allowances provided in the development and in normal budgets.

Technical Staff Cost: In addition to the teaching staff, technical personnel like laboratory assistant, workshop foreman, etc., are necessary for teaching in the science and engineering colleges. Though the technical staff is not considered as teaching staff, they are essential to assist the teaching staff and sometimes they themselves take up certain classes. Therefore, it is treated as a separate unit.

Administration Cost: This unit consists of the university administration and the non-teaching staff of the departments of each college. While estimating the administration cost care has been taken to eliminate the cost incurred on affiliated colleges. This unit indicates only the cost incurred per student on administration in the university colleges.

Common Services and Other Recurrent Cost: The cost under this item includes the expenditure on common services like examinations, student facilities, maintained institutions, dispensary and other auxiliary services and contingencies. The miscellaneous items which cannot be grouped in any of the given units are included in this unit.

Capital Cost: This unit contains the expenditure on buildings, land, laboratories, equipment, library and other items of permanent nature. This unit is carefully estimated on the basis of the theory explained in this paper.

Debt Cost: This item takes into account the interest paid on debt and the repayment of debt. The university has borrowed loans from the Central Government for the construction of hostel buildings and for the acquirement of other capital. The debt cost contains the interest amount and the repayment instalment of this year.

Private Receipts: This item is an important item in this analysis. This item constitutes the income received by the university authority from various sources other than government and endowments. This income to the university contains the contributions of the students by way of examination and admission fees, and other charges received by the university as a result of the provision of certain auxiliary services like transport, electricity and also income from gardens, rents from guest houses, etc. In estimating this item, the income from various sources to the university colleges is only considered and receipts from affiliated colleges are deducted. The obtained amount is deducted from the total expenditure since a part of this item is included in the students' private cost and the remaining receipts like income from gardens, rent from guest houses are the income to the university for their services and therefore cannot be included in the cost of education.

Public Cost: Public cost means the cost incurred by the Government (Centre and State) to educate the students. This cost contains the total expenditure on university education minus the receipts of the university.

Private Cost: This cost constitute the expenditure incurred by private individuals to educate their children. This includes the expenditure on maintenance, fees, transport, etc.

Educational Cost or Expenditure: In this study the terms costs and expenditure are inter changeably used even though they are not similar in a broader sense of the terms. The education sector as a producer of the service of education and like any other sector of activity theoretically brings into play the same concepts of cost used in economic analysis.

Food, Drink at Home and in Hostel, Lodge, etc: Students who are residing in the hostels pay their bills to the hostels but in addition to this, students are also spending money in hotels, clubs on food and other such items. This is also true in the case of day scholars who spend in hotels etc., in addition to their food etc., at home.

Maintenance: Maintenance of students include clothing, laundry charges, foot wear, ornaments, membership of clubs, doctors and medicines, etc.

Transport and Communication: This item includes transport in the city, roundtrips to native place, postage, etc., incurred by hostlers as well as day scholars.

Books and Stationery: This includes the expenditure on textbooks, magazines, journals, dailies, typing charges for project work or notes, paper and pen, etc.

Fees and Academic Purposes: This item takes into account the expenditure on academic matters which includes, various fees, educational tours or visits, tools or tool box, etc.

Pre-admission: This is a new term used to denote the expenditure incurred by students to attend interviews, etc., in connection with the admission into the institutions. This is considered as an expenditure on education as it is the academic item of expenditure relating to the students education.

Hostelers: Hostelers are those students who reside in the Hostels maintained by the university. The students who are residing in other hostels maintained by private individuals or endowments are considered as Dayscholars but not Hostelers.

Dayscholars: The concept of Dayscholar is used in a broader sense. Those students who are residing outside the university hostels are considered as Dayscholars, including those who reside with their parents. Students who have come from distant places but reside outside the University Hostels are also treated as Dayscholars.

Theory of Unit Cost

Unit costs in the educational sector are generally estimated (a) to find out the costing of educational programmes at different stages, (b) to study the rate of return on education, and (c) to plan the educational system by making use of these unit costs. The cost of education can be expressed either in terms of money or in real terms. But, generally, the costs of education are estimated in money terms only as it is difficult to estimate the real sacrifices made by the society and the individuals in the supply of education.

The interest on the unit cost analysis in education has been developing since the time of World War II. Economists started discussing about the theory of human capital after the 1950's in which they have also discussed about the Economic implications of education. Investment in education was considered as an important item of investment in human capital. The Soviet Union has included the educational plan in their overall economic planning in 1923 and achieved complete literacy within one and half a decade. The experience of the Soviet Russia has been taken by many developing countries in planning their educational systems for the rapid socio-economic development. In this connection, cost analysis, has become a necessary tool for modern educational planning particularly in the developing country. P.H. Coombs says that the "hard earned experience of recent years, provided valuable lessons on low cost analysis can be used as a tool for decision-making, and on the penalities paid when cost analysis is neglected".[3] Therefore, the cost analysis in education has become inevitable as it does the following important functions:

(1) Suggests the alternative methods of inspection and their effectiveness. (2) Costing and testing of the economic feasibility of educational plans. (3) Evaluating and improving the allocation of available resources for different levels and types of education within education sector and for different types of sectors in the economy as a whole. (4) Determining both the short and long run cost implications of a particular educational project. (5) Estimating the rate of return on education. (6) Estimating the introductory cost and the likely long term cost impact of a major educational innovation. (7) Suggesting the efficient use of the buildings and other capital equipment. (8) Checking the economic implications and feasibility of special policy decisions before they are made.

Components of Educational Costs: [illegible] Expenditure on education is provided through different sources. The pub[illegible] expenditure on education is generally devoted to teachers salaries, buildings equipment, inspection and direction etc. The private individuals and endowments are also spending a considerable amount on education. In order to arrive at a comprehensive idea of educational cost, all the sources of expenditure should be added together. But, in most of the cost studies such attempt has not been made since the data on the private sources of expenditure is not available. The private sources of expenditure can be estimated only through a sample survey which is considered to be very difficult in a large country like ours if we wanted to estimate the expenditure at the national level. Before proceeding to analyse the total cost of education, it is necessary to know the various components of education. The following are the important components of education at any stage.

1. Institutional or school related costs,
2. Student or personal costs, and
3. Opportunity costs (earnings foregone).

Each of the above components can again be divided into sub-groups for detailed analysis.

Institutional Cost: A major part of the educational cost is incurred on the broad category of educational expenditure. This component is generally analysed by dividing it into (1) recurrent or recurring cost and (2) non-recurring or capital cost. This distinction is applicable only under this component as the other two components cannot be divided by virtue of their nature. J. Hallak, has classified the educational expenditure in a booklet for the UNESCO as follows:[4]

Recurring Expenditure: (a) *For instruction:* Salaries and allowances (teaching and non-teaching staff), school textbooks, other instructional expenditure, materials and supplies, etc. (b) *Other recurring expenditure:* Scholarships and grants (i) for study in the country, (ii) for study abroad; Welfare services, canteens, transport, boarding, sports, maintenance of buildings and equipment; Operation of buildings (fuel, light, water and gas); Others.

Capital Expenditure: Purchase and development of land; School building, classrooms, laboratories and fixed equipment; Other durable instructional equipment; Welfare services, residence halls, etc.; Others.

Debt Service: Similarly, John Vaizey[5] has also estimated the costs of education in England and Wales which was reclassified by B. Dey[6] into 6 items as follows:

> (1) Direct expenditure, (2) Meals and Tiffin, (3) Students Health Services, (4) Training and Teaching, (5) Administration and Inspection, (6) Transport services.

The above classification is not very clear as it does not explain who is incurring, what expenditure. Moreover, this classification does not suit our conditions because a major part of the costs of our Education is still borne by the parents or the students which need information from students and their parents. That is possible only through a sample survey.

Student Costs or Personal Costs: In most of the countries including the countries where education is free, a part of the costs on education is borne by the parents of the student by way of their maintenance, books, recreation, etc. As long as the children of the parents remain as students, the expenditure incurred by the parents on their children can be considered as the expenditure on education. The items of expenditure under this category vary from country to country because in some countries the entire school related expenditure is borne by the Government and in some countries a part of it and in some countries some items are only incurred by the Government. However, the expenditures in this category fall under the following heads:

(1). Food and maintenance including recreation, medicines, etc. (2) Transport. (3) Books and stationery. (4) Fees and other academic activities including tours, etc. (5) Pre-admission including the expenditure on pre-admission interviews, marks list, etc.

The distinction between fixed and variable cost can be applied here since all these items vary with the growth of the student. The same is explained elsewhere in this article. However, certain items like a reference book, a dictionary, a tool box, reading table, etc. can be considered as a fixed cost under this category. But the percentage of expenditure on these items to the total expenditure is very meagre and can be neglected.

The above classification gives us a broader view of the student related cost. In fact, each of the items can be divided into various sub-components, for example food and maintenance item can be divided into food, clothing, tiffin, tea, etc, at home, in the hostel or in a hotel etc., depending upon the residence of the student viz., day scholar or hostler. But the detailed classification is not necessary in unit cost analysis wherein we concentrate more on the total cost and on the unit selected for analysis.

The actual cost of the student related cost can be estimated by taking into account the overall expenditure made by the student or his parents minus the Government's contribution to the student by way of scholarship, freeship, etc. The Government contribution has to be deducted from the student's overall expenditure so that we can arrive at a real figure which is actually spent by the student.

Opportunity Cost: The opportunity cost in education is a very important component of educational expenditure. But it has a limited application as the computation of this cost is very difficult. The opportunity cost is generally treated as the opportunity cost or income foregone by the students while they are in the institution. The opportunity cost is equal to the amount which they would have earned had they not attended the school. This cost is not only a student related cost but also a social cost, because the society looses the same amount that could be added to the GNP of the country. The problem of estimation of opportunity cost lies with the problem of unemployment. How is it possible to estimate the opportunity cost of a matriculate when thousands of them are unable to get jobs? But at the same time can we say the opportunity cost of a matriculate is zero. Blaug et al, in their study "the causes of graduate unemployment in India" have estimated the opportunity cost of education on two assumptions namely[7]:

(a) the optimist's assumption: the student in question will not be one of the unemployed, and therefore, no adjustment is made to earnings foregone.

(b) the realist's assumption: earnings foregone at every age are weighted by the age-education specific probabilities of unemployment.

In most of the cost studies the estimation of opportunity cost is altogether eliminated or neglected. But, this can be estimated provided the necessary data on the age-specific earnings at different levels of education is available. The estimation will be more realistic if an adjustment to the age-specific mortality rate is also taken into consideration.

Fixed and Variable Costs: If the educational sector can be treated as an industry which produces products like degrees, certificates of "the education value added", then the cost can also be divided into fixed cost and variable cost. The capital costs and other indivisible costs are the fixed costs in education. These fixed costs are those which are incurred by the institution for all the members of the institution including the non-teaching staff. They include the cost of land, buildings, hospitals, laboratory, library, hostels, gas-plant, electricity, telephone, etc., which are used by all the members of the institution. It is very difficult to assign a particular percentage of this cost to any group of the institution such as 20 per cent expenditure on the teachers, 10 per cent on students and so on. Therefore, these costs can be treated as fixed costs and they will decline as the number increases. In fact all the non-recurring costs can be treated as 'fixed' costs as they have all the features of a fixed cost.

The variable costs in educations are the recurring costs. The recurring costs in education will vary with output (the education value added). The teacher student ratio, the capacity of the building, the nature of the course, etc., will generally determine the variable cost in education. In education, the rise in expenditure on these items can be temporarily avoided by changing the teacher student ratio, the size of the class, etc., by a statutory order. But, the external productivity of such products is doubtful even though the system exhibits a high amount of internal efficiency by producing more products with less cost. However, the main aim of any educational system is to produce both internally and externally productive outputs, therefore, the teacher student ratio, size of the class etc., are generally kept unaltered. Given these conditions, the variable costs in education include the expenditure on teachers salaries, salaries of the non-teaching staff and technical staff, scholarships, hostels, library books and other miscellaneous items which vary with the student number.

The above analysis is possible only when we consider the costs of an institution or the education firm as a whole. If we need to analyse the costs of each student or class etc., then the problem of indivisibility will arise. There are some costs in education which are indivisible and cannot be assigned to any student or group of students or class. These costs are incurred by the institution on all the members of the institution as a whole. These indivisible costs are incurred both on the capital items as well as on operating items of expenditure, for instance the expenditure on the Doctor's salary, the power plant, etc.

Precautions

While estimating the unit costs, the following precaustions are to be taken into account to avoid double counting and other related problems of costing.

Capital Cost: The problem in educational costing are generally associated with the treatment of capital costs and recurrent costs which are considered to be the important components of institutional cost. A large amount of money is spent on the construction of buildings, acquisition of land, equipment, furnitures and books every year. This item of expenditure is treated in different ways by different writers. Some writers have included the capital expenditure in the total expenditure and some have treated it as a separate item. If this item is included in the total expenditure and distributed among the students, the cost will be unnecessarily inflated in the initial period of the institution. Therefore, this item should be treated as a separate item as it is associated with durable educational inputs which is otherwise known as capital costs. It is a common practice that the initial expenditure on equipment, books, etc., are treated as capital expenditure and thereafter they are treated as current expenditure. But this treatment violates the theoretical aspect of capital cost.

The stock of capital is the stock of buildings, equipment, books and other capital items at a point in time. These items are subject to depreciation and need replacement after some time. Here, the value of the capital cost can be estimated by depreciating the original cost of each item in the stock of capital at an appropriate rate. Alternatively, it can also be measured by estimating the replacement value of it minus depreciation. The capital cost can also be estimated by spreading the total expenditure of the item on the life span of the item by applying an appropriate depreciation change to each year. Interest rates of the capital should also be taken into account. The estimation of the capital cost will be much easier if the item is a hired one for rent. The rent of the item can be considered as a capital cost.

Philiph Coombs and J. Hallack have suggested the construction of time series of capital expenditure so that it will be able to explain the past and shed useful light on the future of capital costs.[8] They have also suggested 5 guidelines in building the time series wherein we need to break the expenditure by stage of education and institution, foreign and domestic funds, cost at current prices and constant prices, repairs and replacement, budget allotment and actual figures. But, such a time series data is very difficult to obtain particularly in the developing countries.

The expenditure on books, laboratory equipment, etc., are treated as recurring non-divisible cost. But, they should be treated as capital cost as the books, laboratory etc., will also be used by future generations of the students like that of the buildings, etc., which are treated as capital expenditure. Moreover, buildings as well as books and laboratories etc., need replacement after some specified time. The expenditure on books, equipment, etc., are necessary not as a recurring item but they become essential only when the the knowledge and scope of the subject is increased. In the case of recurring expenditure they need to be used even though there is no advancement in knowledge. But, in the case of books and equipment, they need not be bought every year if there is no change in the content of the book and they can be replaced when they are worn out like other capital equipment.

In most cases books and equipment are bought only when there is something new added in them or when the existing books and equipment are completely obsolete. The distinction between recurrent non-divisible cost and capital costs are very confusing. They need clarification. The non-divisible recurring costs are those which are recurrent even though there is no substantial change in the content, method and policy of the education such as administrative staff salaries, hostel, etc., and all other items are capital costs. In compiling the capital costs care should also be taken to include the private capital costs incurred by endowments and institutions maintained by private individuals.

Recurrent Cost: Careful examination in the selection of items under this head is essential. As pointed out above, these costs can be divided into divisible and non-divisible. The non-divisible recurrent costs are incurred for the entire institution as a whole as such they cannot be assigned to any group. The divisible costs can be assigned to a particular unit, if the analysis is a unit cost analysis. The difficulty in this recurrent cost analysis is the size of items, some of which are very large and others relatively small. In this case a general rule suggested is, to allocate the expenditure according to the relative quantitative importance of each item.

In most of the cost analysis studies only the financial costs to the public budget are estimated. But, the educational costs include the private costs incurred by private institutions, individuals and endowments. Some of the studies on educational costs have excluded arbitrarily all of the costs of non-formal education. In treating the non-teacher recurrent costs, often all types of current costs are lumped together and expressed as a percentage of the teacher costs. But such estimation leads to wrong conclusions as the movement of the teacher costs are different from the non-teacher recurrent costs as the latter's movement is very high compared to the former. In the unit cost analysis, the scholarships, freeships and other student related non-teaching recurrent costs can also be estimated per unit chosen. But, how the loan scholarships which are considered to be repaid by the receiver can be treated? Are they considered as a private cost or a social cost?

In treating this item care must be taken whether the payee is asked to return the amount or exempted to pay the amount in case one is appointed in selected institutions.[9] If he is not exempted to repay the amount, at what rate of interest the scholarship holder is repaying it and what is the mode of the repayment. The opportunity cost of the scholarship amount according to the market rate of interest can be estimated for the period and the same can be treated as cost of education if the amount is repaid, otherwise the entire scholarship amount will be treated as the cost of education. Here, this amount should be treated as social cost as the Government is paying this amount from tax payers money like that of the salaries of the teachers.

Private and Social Cost: In all the above items of expenditure, we will come across two varieties of costs viz., private costs and social costs. In addition to Government's contribution to certain items, students or parents are also incurring some expenditure on these items. For instance, the institutions buildings are built by the Government as well as by the private individuals also. In treating these expenditures, private and Government contribution has to be taken into consideration to arrive at a comprehensive idea of the cost. Similarly, in student related costs sometimes the Government will also contribute by way of mid-day meals, scholarships, etc. All these things should be taken into account in arriving at an aggregate amounts of cost of education.

The above precautions will help the cost analyst to avoid at least certain pitfalls, but not all of them.

The Choice of Units Required: The above theory of costing gives us a broad picture of analysis which is essential in dealing with educational costing. Another important piece of information necessary to deal with this aspect is the unit. It is generally meant that a unit cost is the annual cost per student enrolled. But there are other types of unit costs measures that can help us to treat the units more meaningful and useful in estimating the cost-benefits of education. The units can be divided as follows:

> (1) the cost per pupil, (2) the cost by level of year of education attained, (3) the cost per average daily attendance, (4) the cost per teacher, (5) the capital cost per pupil, (6) the cost per class room, (7) the cost per school, and (8) the cost per square of cubic feet.

The above list can be extended depending upon the purpose for which it is analysed. Philiph Coombs and J. Hallak opined that the unit should be chosen on the basis of the item with which the cost analyst is concerned. If you are costing the number of pencils and textbooks needed, or the food bill, then the individual student is the most appropriate unit because in these cases cost varies in direct proportion to the number of students. But, if you are estimating requirements for teachers, or for desks, maps, globes, and various other items of classroom equipment, then the classroom is usually the best unit, since the staffing and equipment requirements vary with the number of classrooms rather than the number of students. In estimating heating and lighting costs, square or cubic feet may be the best unit.[10] But generally both are estimated to find out the rate of return on education. The rate of return can be social rate of return or private rate of return. The social rate of return needs a comprehensive idea of cost which includes private expenditure, Government expenditure and opportunity cost. The private rate of return needs information only on student related expenditure or the amount spent by the student or the parents of the student on his education in different ways and the opportunity cost of being in the school rather than in employment. Of course, some amount of allowance has to be made for unemployment and other contengencies.

The Cost Per Student in the University Colleges

So far we have examined the theory behind the unit cost analysis. The theory helps us to estimate the different units cost of education in the University Colleges of Andhra University. A survey has been undertaken in this regard to estimate the private costs of education. The university budget for the year 1976-77 has been consulted to compute the public cost per student. Generally, Researchers in the field of Economics of Education have either computed the Direct expenditure or Indirect expenditure or both for purposes of unit cost analysis. A comprehensive estimation of the average cost per student is seldom estimated because of the involvement of the sample survey. In this study only two colleges of the university have been surveyed since the Engineering College is mainly devoted for the Bachelor degree. The private average cost per student is computed on the basis of the survey and the costs are expressed by taking into account the socio-economic background of the student. The results are discussed in the following paragraphs.

Average Cost Per Student (*Public*): In the first instance, let us examine the average cost per student on the basis of the university budget. This cost is called as the public cost since the government expenditure on the university education is taken into consideration in this regard.

Table 1 indicates the average cost per student as well as the cost per student for a few selected units in the Arts and Science Colleges of the University. The total average cost per student is Rs. 5134. A maximum amount in the Arts College (49.71 per cent) is devoted for the common services like examinations, library staff, hostels, dispensary and to other student's facilities. The teaching cost per student is 1621 rupees which is exactly double the amount of the expenditure on administration. The actual expenditure incurred by the Government per student can be obtained if we deduct the private receipts such as tution fee, admission fee, examination fee and other contributions. The total receipts received by the university per student in the Arts College comes to Rs. 1941. After deducting this amount from the total expenditure, we will get the real cost incurred by the Government per student in the Arts College which is Rs. 3193. As we have mentioned in the methodology, the cost per student relates to only for one year of the course. Therefore, the total cost required to be incurred to complete a two years course in the Arts College is 6386 rupees per student.

The right corner of the Table 1 explains the unit cost per student in the

Table 1

AVERAGE COST PER STUDENT UNDER DIFFERENT UNITS (PUBLIC)

S. No.	Arts College			Science College		
	Exclusive	*Obtained from common expenditure*	*Total*	*Exclusive*	*Obtained from common expenditure*	*Total*
1. Teaching	1621	—	1621 (31.57)	3388	—	3388 (38.90)
2. Technical	—	—	—	831	—	831 (9.54)
3. Administration	197	623	820 (15.97)	840	623	1463 (16.80)
4. Common services & other recurrent expenditure	719	1833	2552 (49.71)	746	1833	2579 (29.61)
5. Capital	30	103	133 (2.59)	338	103	441 (5.06)
6. Debt	—	8	8 (0.16)	—	8	8 (0.09)
Total	2567	2974	5134 (100.00)	6143	2994	8710 (100.00)
Less receipts	163	1778	1941	203	1778	1981
Actual cost	—	—	3193	—	—	6729

Figures in the brackets indicate the percentages to the total.

Science College. The average cost per student in the Science College is 8710 rupees. In the Science College a maximum amount (38.90 per cent) is devoted to teaching and 29.61 per cent to common services. The average cost per student after deducting the private receipts comes to 6729 rupees. To complete a two years course in the Science College rupees 13458 are incurred.

The average expenditure per student in the Science College is double the amount of the Arts College. There is a significant difference between the two colleges in the allocation of expenditure for different units. In the case of Science College the maximum amount is devoted for the common services and in the Science College for teaching. The average capital cost per student in the Science College is more than the Arts College since the Science Colleges spend more on their laboratories and equipment. In the Science College a considerable amount is also spent on technical staff. In both the colleges administration expenditure constitute half of the value of the teaching cost. All these costs are expressed at current prices.

Average Cost Per Student (*Private*): The average cost incurred by the individual student or by the parents of the student on his maintenance, transport, books and stationery, food and other related expenditure is known as the personal or private expenditure on education. The average expenditure is computed by dividing the students into dayscholars and hostlers. The students are divided into two groups because, there is a considerable change in the pattern of expenditure in these two groups of students. The dayscholars for instance spend more on transport than the hostelers because the later resides in the campus. Even though our education is highly subsidised, a considerable amount of money is also incurred by the parents of the students. Therefore, the average personal cost of education is still a major part of the total cost of education in our country.

Table 2 indicates the average cost incurred by a hostler in the Arts College is Rs. 4873 while the dayscholar spends Rs. 5135. Generally people believe that a Hostler spends more than the dayscholar. But, in fact the dayscholar has to incur more money on transport, academic purposes etc., than the hostler who has certain advantages of his stay in the campus. The figures in the Table 2 indicate that the hostler is spending less than the dayscholar except the pre-admission expenditure. The pre-admission expenditure here consists of the amount spent on interviews before admission, marks list etc. Naturally the candidate need not incur expenditure on this item as such this amount is less than the hostler who is an outsider to the institution. However the dayscholar too is spending about 80 to 150 rupees on certificates, etc. More than half of the amount is devoted for food, drink and lighting in both the categories of students.

In the Science College, the dayscholar is spending on an average less than the hostler. The reason might be that the habits of the dayscholars are different from that of the hostlers. The nostlers whether they belong to Science College or Arts College possess similar characteristics. But the dayscholars have different habits. However, the reported amounts of the day-

Table 2

THE AVERAGE COST OF EDUCATION (PRIVATE)

S. No.	*Arts*		*Science*	
	Hostler	*Dayscholar*	*Hostler*	*Dayscholar*
1. Food, drink & lighting, etc.	2557 (2635)	2550 (2550)	2488 (2488)	2223 (2223)
2. Maintenance	1287 (1287)	1378 (1378)	1281 (1515)	1145 (2068)
3. Transport	347 (394)	435 (532)	325 (402)	313 (382)
4. Books & stationery	289 (523)	395 (684)	274 (482)	273 (629)
5. Academic purpose	240 (620)	289 (289)	287 (653)	296 (322)
6. Pre-admission	153 (153)	88 (88)	125 (192)	74 (109)
Total	*4873* *(5612)*	*5135* *(5916)*	*4776* *(5632)*	*4324* *(5733)*

Figures in the brackets indicate the reported amounts.

Table 3

AVERAGE EXPENDITURE PER STUDENT BY PARENTAL INCOME BACKGROUND

Income Groups	*Arts*		*Science*	
	Hostlers	*Dayscholars*	*Hostlers*	*Dayscholars*
1. Above 30,000	8403 (2.86)	8509 (3.13)	—	—
2. 12001—30000	5514 (12.86)	5546 (21.88)	6601 (11.25)	5678 (23.08)
3. 7001—12000	5355 (12.36)	5732 (21.88)	5248 (18.75)	4534 (7.70)
4. 60001—7000	5129 (2.86)	4860 (9.38)	4352 (11.35)	4221 (15.39)
5. 4001—6000	4628 (5.72)	3592 (6.25)	4678 (15.00)	4949 (7.70)
6. Below 4000	4504 (62.86)	4860 (37.50)	4440 (53.75)	3751 (46.16)

Figures in brackets indicate the percentage of students to the total students.

scholars are more than the hostlers. In the Science College, hostlers devote more than half of the amount to food and drink and the same is the case with the dayscholars. Maintenance which consists of their clothing, health, etc., consumes nearly one fourth of the total expenditure.

There is a considerable difference between the Science and Arts College students in their expenditure habits. The Science College students as a whole spend less than the Arts College students. The Science College students devote 6 per cent of their total expenditure to academic purposes while the Arts College students devote only 4 per cent. In the case of Books and Stationery both the Science and Arts College students spend equally. But the dayscholars devote more money to this item compared to the hostlers. As a whole the expenditure incurred by a Science College student is less than the Arts College which is contrary to the generally held opinion of the parents that Science education is costlier than Arts education. This popular opinion has validity when we consider the comprehensive cost of education which aggregates both personal and public cost. But the personal cost of a Science student particularly in Andhra University is less than the Arts College student. In other words, it is less expensive from the point of view of the parents to give Science education than Arts.

Another important adjustment that has to be made in order to arrive at the real cost of education is the Government's contribution to the individual student's education through scholarships, concessions etc. If we are interested to know how much each student has incurred expenditure on education from his pocket, we have to deduct the Government's contribution from the total personal cost of the student. But here, the Government is not giving the same type of assistance to all the students. The Government is providing more money for the socio-economic weaker sections than other groups. Students belonging to forward communities are also getting scholarships like merit scholarships which is equivalent to the value given to the Backward community students. The students who are getting loan scholarships have to repay the amount after sometime. Therefore, such scholarships cannot be deducted from the personal costs. However, in estimating the comprehensive cost, all the expenditure including the opportunity cost of scholarships is to be added together.

The Government is contributing 52.43 per cent of the personal cost to the Scheduled Caste hostel students while the contribution is only 20 per cent and 26.92 per cent to the Backward Community and Economically Backward Community students respectively (See Tables 6 and 7) in the Arts College. In the case of dayscholars the Government's contribution is less than 20 per cent for all the groups. In the Science College the Scheduled Caste hostler gets 42.20 per cent of his personal cost from the Government while the Backward Community and Economically Backward Community students get 19.95 per cent and 24.72 per cent respectively. The loan scholarship contributes only 17.60 per cent of the personal cost of the student. The day scholars are relatively neglected in Government's assistance both in the Arts and Science Colleges.

The Influence of Socio-Economic Background on the Costs: The income, occupation and other such socio-economic variables will naturally influence the expenditure pattern and habit of the students. We have examined the students expenditure by their parental occupational background and income by dividing the occupations into 9 varieties and income into 6 groups. The classification of the occupation is obtained from the Census classification while the income grouping is based on the survey.

Income Background: It is generally held that the high income group students spend more than the low income groups. The first income group constitutes 2.86 per cent of the total students, the second income group 12.86 per cent, third income group 12.86 per cent, fourth income group 2.86, fifth income group 5.76 and the sixth income group 62.86 of the total students in the category of hostlers in the Arts College (See Table 3). In the dayscholars category the students are equally divided between the first three and the last three income groups. In the Science College there are no students in the first income group and more students belong to the last two groups both in the hostler and dayscholar category of students.

In the first income group, the students of the Arts College on an average spend Rs. 8403 per annum, in the second income group Rs. 5514, in the third income group Rs. 5129, in the fifth income group Rs. 4628 and in the sixth income group 4504. In the dayscholars category the first income group spends Rs. 8509, the second group Rs. 5546, the third group Rs. 5732, the fourth group Rs. 4860, the fifth group Rs. 3592 and the sixth group Rs. 4860. In the case of Science College the second group devotes Rs. 6601, the third group Rs. 5248, the fourth group Rs. 4352, the fifth group Rs. 4678 and the sixth group Rs. 4440 per annum in the hostler category. In the dayscholars category the first group is not represented in the study, the second group spends Rs. 5678, the third group Rs. 4534, the fourth group Rs. 4221, the fifth group Rs. 4949 and the sixth group Rs. 3751 per annum.

The above analysis shows that the expenditure per student per annum is falling as the incomes of the parents are decreasing in the case of hostlers. But in the case of dayscholars the expenditure has come down upto the second income group and charged in the third income group. But the fifth income group student spends less than the sixth income group student. The reason for this peculiar trend might be due to the extravagance of the students in these income groups or the incomes given by the students in these income groups might be false. Another peculiar feature is that the students in the lower income groups spend more than their annual income. One would wonder how they are able to spend more than their income for a single individual. But, this is possible because most of the students in this group get scholarships or otherwise get loans to prosecute their studies. In the Science College the expenditures are falling in the case of hostlers and day-scholars upto the fourth income group. But the fifth income group students both in the hostlers and day scholars category spend more than the fourth income group students. The reasons for this might be again due to the factors mentioned above in the case of Arts College students.

Occupational Background: The nine occupations of the students' parents are again divided into two groups viz. white-collar occupations and menial occupations. There are no students from the transport and mines workers families in both the colleges. This does not mean that they are not represented in the university. The percentage of their representation in the university is very meagre compared to other occupational background students.

Table 4 explains the average expenditure per student with occupational background of his parents. In the Arts College the students belonging to farmers families are spending more than the other occupations both among the hostlers and dayscholars. The lowest amount is spent by the students belonging to professional occupations among the hostlers and craftsmen and labourers among the day scholars. In the Science College the highest amount is spent by the students belonging to the sales workers families both in the hostler and dayscholar's category. The lowest amount is spent by the students belonging to craftsmen and labour families among the hostlers and service workers among the dayscholars.

The students belonging to agriculture families spend on par with the students who have come from administrative occupation families. This shows that the rich farmers are as good as the administrators in providing education to their children and also in giving funds to their children. Students belonging to other occupational background are not able to compete with these groups in terms of expenditure. This phenomenon is quite relevant in the context of the expenditure habits of these two groups. It is found that the Administrative workers among the white-collar occupations and farmers among the menial occupations are the two important prosperous groups both in the educational institutions as well as in the society at large. Of course this analysis has a limitation as each category of occupation contains different income groups. But, the analysis is taken up here only in the context of the influence of the occupation on the expenditure pattern. We have already examined in the preceeding paragraphs about the influence of income over the expenditure habits of the students in the University Colleges.

Comprehensive Cost: The comprehensive expenditure as suggested by Malcolm S. Adiseshaiah consists of "the educational expenditures incurred by the other departments of government including the military and the police, the local authorities such as village panchayats, and district boards by voluntary bodies such as Muslim, Christian, Buddhist and Hindu educational agencies, by business undertakings and above all by parents and guardians are difficult to collect and collate and even more difficult to fit into any known expenditure classification without running into the kind of problems that are faced when dealing with the non-monetized sector and those involved in double counting".[11] In other words, the comprehensive expenditure must include the expenditure incurred on education from all sources. Similarly, in estimating the unit cost, the units must take into account the expenditures

Table 4

AVERAGE PRIVATE EXPENDITURE OF STUDENTS BY PARENTAL OCCUPATIONAL BACKGROUND

Occupation	*Arts College*		*Science College*	
	Hostler	*Dayscholar*	*Hostler*	*Dayscholar*
White collar				
Professional	4403	5126	4891	4161
Administrative	5294	5557	5186	4294
Clerical	—	—	3940	—
Sales Workers	5334	5067	5195	6304
Menial				
Farmers	5434	5873	4636	4038
Mines & Transport	—	—	—	—
Craftsmen & Labour	4250	2107	3842	—
Service	4541	3916	4972	3690

Table 5

AVERAGE COMPREHENSIVE COST PER STUDENT

Item	*Arts College*		*Science College*	
	Hostler	*Dayscholar*	*Hostler*	*Dayscholar*
Public cost	3193	3193	6729	6729
Personal cost	4873	5135	4776	4324
Opportunity cost (assumed)	4000	4000	4000	4000
Total average cost	12066	12328	15505	15053

Table 6

ARTS COLLEGE

AVERAGE REAL EXPENDITURE PER STUDENT PER YEAR AFTER DEDUCTIONS OF THE GOVERNMENT CONTRIBUTION

Caste Group	*Hostler*			*Dayscholar*			*Real amount of expenditure of the Hostler*	*Real amount of expenditure of the Dayscholar*
	Expenditure amount	*Govt. contribution*	*% of the contribution to the total expenditure*	*Expenditure*	*Govt. contribution*	*% of the contribution to the total expenditure*		
S C	4146.33	2173.86	52.43	3297.00	300.00	9.10	1972.47	2997.00
S T	—	—	—	—	—	—	—	—
B C	5025.92	1005.25	20.00	4395.75	200.00	0.05	4020.67	4195.75
E B C	3652.67	983.33	26.92	—	—	—	2669.34	—
P H	—	—	—	4851.00	800.00	16.50	—	4051.00
Others	5487.62	—	—	5454.35	—	—	5487.62	5454.35

Table 7

SCIENCE COLLEGE

AVERAGE REAL EXPENDITURE PER STUDENT PER YEAR AFTER DEDUCTIONS OF THE GOVERNMENT CONTRIBUTION

Caste Group	*Hostler*			*Dayscholar*			*Real amount of expenditure of the Hostler*	*Real amount of expenditure of the Dayscholar*
	Expenditure amount	*Govt. contribution*	*% of the contribution to the total expenditure*	*Expenditure amount*	*Govt. contribution*	*% of the contribution to the total expenditure*		
S C	4746.40	2240.00	47.20	—	—	—	2506.40	—
S T	—	—	—	—	—	—	—	—
B C	4588.00	915.00	19.95	4211.00	200.00	4.75	3673.00	4011.00
E B C	3843.50	950.00	24.72	3400.00	200.00	5.89	2893.50	3200.00
P H	—	—	—	—	—	—	—	—
Others	4857.76	L 855.00	L 17.60					
		M 1404.00	M 28.91					
		O 710.00	O 14.62	4532.82	—			
		RA 1105.79	RA 22.79				RA 3751.97	
		A 362.25	A 7.46				A 4495.51	4532.80

Here L—Loan Scholarship, M—Merit Scholarship, O—Others including Military, Teachers Sons etc., RA—Reported Average, A—Average.

made on students' education from all sources—students, parents, loans, scholarships, Government and other authorities who are concerned with university education plus the opportunity cost. As far as the university costing is concerned, there is no problem of overlapping of any items of expenditure or income since all sources of income and expenditure are given in the university budget. The private cost or personal cost of education is computed on the basis of the survey. The opportunity cost of university education is very difficult to estimate. A rough estimation can only be possible in the given data set up. The waiting period for a graduate is more than 2 years in the state as such one can say the opportunity cost of a post-graduate is zero. But in our country a graduate or a post-graduate is prepared to take up a job which is meant for a matriculate. Therefore, it is reasonable to assume the opportunity cost (or earnings foregone) of a post-graduate is at least equal with that of a matriculate's salary. The matriculate's salary at present is roughly equal to Rs. 4000 per annum. The comprehensive cost can be computed now on the basis of estimates so far made. Table 5 gives us the figures.

The students are divided into two groups as dayscholars and hostlers for the purpose of estimating the personal or private cost. But for all other costs and purposes they are same. That is why the average public cost is same for all categories of students. So far, the unit cost is estimated only for one year i.e., previous students. The total cost incurred to complete a two years course need double the amount and a three years course three times the amount estimated in Table 5, minus the pre-admission expenditure which is not incurred by a final year student. On the basis of these estimates, we can say that two years post-graduate in Arts, costs 24,839 rupees in the hostler category and 24656 rupees in day scholars category. Similarly, in the Science College a two years course costs 31,010 rupees in the hostlers category and 30,106 rupees in the dayscholars category. If the rate of return is estimated on the basis of these costs the return would definitely be less than what is popularly held by the Economists. However, these costs are influenced by inflation, increase in the cost of education material and increase in the salaries of the teaching and non-teaching staff.

Conclusions

Eversince education is recognised as an investment in human capital, Economists have been trying to estimate the returns on such investment which also involves the estimation of private and public costs of education. But, a comprehensive cost and a theory behind such a cost has not been developed in our country. Various agencies like the IAMR were involved to estimate the cost of education but, with a limited purpose. The rates of returns estimated by the experts on the basis of these estimates are to some extent 'jaundiced' the Economists. Taking these things into account, an attempt is made in this study to provide a theory on unit costs as well as the estimates based on the theory. Even the present study has certain limitations because there is no systematic recording of data relating to education in our country. The university budgets and the state budgets do not provide information with different break ups like capital expenditure, teachers salaries, etc. This limitation of data has forced us to estimate the comprehensive cost with certain assumptions and adjustments. The results of this study indicate that the comprehensive cost of a university student in Arts-based subject is about Rs. 24,000 and in Science-based subject is about Rs. 31,000. These results may be startling, but the comprehensive cost of education based on the theory gives such an estimate. The expenditure habits and the pattern of private expenditure of the students are mostly influenced by their socio-economic background. However, these economic aspects of education reveals only one aspect of it. It cannot examine the non-measurable, unidentifiable and intangible benefits or costs of education. Moreover, university is a multi-product firm, and therefore, involves the problem of joint supply. Similarly, the teachers in a university are responsible for research and also for the production of textbooks and articles. In this case, it is not rational to assign the entire teacher's salaries to students to obtain the teacher's cost per student. But, given the present knowledge in economics of education and stage of statistical data, a standardisation is essential to express the cost with as little error as possible.

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10. Coombs, P.H. and Hallak, J., *Managing Educational Costs*, p. 148.
11. Malcolm S. Adiseshiah, *Costs of Education and Teacher Supply*, in Education in Andhra Pradesh, Telugu Akademi, Hyderabad.

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Faculty and Student Status in Administration

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Education is an investment. This fact underlies recent educational development in all the major industrial societies. Jean Floud, A.H. Halsey and Anderson[1] maintain that in every case the development of education bears the stamp of a dominant pattern imposed by the new and often conflicting pressures of technological change. Schultz[2] also observes that economic value of education depends predominantly on the demand for and supply of schooling approached as an investment, and in advanced industrial societies, it is inevitable that the educational system should come into very close relationship with the economy; and Drucker[3] asserts that the 'highly educated man has become the central resource of today's society, and as such an abundant and increasing supply of highly educated people has become the absolute pre-requisite of social and economic development and the uneducated is fast becoming an economic liability'. Schultz[4] has calculated that as proportion of all productive capital in American human capital has arisen between 1950-57 from 22% to 42% and Denison[5] has attributed the phenomenal economic growth in the U.S.A. much more to education and advance of knowledge than to capital accumulation. V.K.R.V. Rao[6], however, considers education as a social enterprise. To him the contribution of most education is multidimensional, in serving one and the same time, social, political and other purposes. He likes education to be treated as investment in human resources but cannot think of education only in terms of investment and for him the criterion of education as an investment is the positive return in terms of freedom from unemployment among educated persons and a positive correlation between earnings and education. Mukerjee[7] also holds on to the same view when he says that 'any investment for a type and method of education that causes or aggravates unemployment is, however, wasteful from the view point of human resource development'.

If education fails to give a positive return and there is continuing unemployment then there is something wrong in the educational system as a whole and there is need to examine the education content, the organization, management and climate of educational institutions including discipline and other such factors that could be unrelated or inadequately related to productivity. Rao[8] strongly asserts that the Indian educational system as it exists today is not giving as positive a return as it is expected to give and pleads for a much closer relation between higher education and man power requirements for the developing economy of the country than has been done so far. But dissatisfaction with the educational system has not been a phenomenon peculiar in India alone. The last few years of the 5th and 6th decade of the current century have witnessed a serious student crisis all over the world and all concerned with education have begun to evolve modes of theoretical and practical criticism for everything including the organization and administration of institutions of higher learning and mass media in general.

How to make the educated people more employable and how to raise the return on education? In other words, how to make the educational system effective and useful for students, teachers and the members of the community whose interests are at stake in the undisturbed and proper functioning of the system. The importance of democratic setting in the organization and administration of business enterprises and industries has been recognised in countries wedded particularly to democratic ideals where attempts have been made to ascertain empirically the value of democratic functioning of the organisations in realizing organizational goals. Studies of those of Katz,[9] Bavelas,[10] Roethlisberger[11], Levine and Butler,[12] all have shown that 'workers do better when some degree of decision-making about their job is possible than when all decisions are made for them'. As in industries, democratic setting in educational establishments will also possibly raise the return on education and make the educative process productive and satisfying to education personnel. It will also raise the honour and status of teachers and students which depend on the extent to which they participate in the total educative process and activity including the administration of the institution and the extent to which they have their ego-involvement and identification with their institution.

Reviewing the researches on participation, Likert[13] observes that people within each social or industrial organization are accustomed to some degree of participation in its functioning. Srivastava[14] reports similar findings from his survey of student participation in the governance of teacher training institutions. He found the participation scores ranging from 52 to 152 with a Mean of 110.58 and S.D. 21.2 against the scale score ranging from 46 to 184 and the scale mid-value of 115. In this survey of 51 teacher training institutions he found no institution reporting the score of 46 which was the minimum required to be at the end of the scale indicating 'no-participation. Whether this is true of the non-professional institutions of higher education in India where the teachers and students are allowed to play the participatory role and thus enjoy certain honour and status in the administration of their institution is being enquired into this paper.

The findings reported in this paper are based on the responses obtained by the use of a set of two questionnaires—a participation scale and a participation survey questionnaire on a group of 386 respondents (194 teachers and 192 students) and 402 respondents (194 teachers and 208 students) respectively from 34 Delhi University colleges. The findings are similar to those reported in earlier studies—that both teachers and students do get some participatory role to play in the administration of their institutions. As the participation scale used in the present study is a slightly modified version cf the student participation scale developed and used by Srivastava[15] in his earlier study and as a different method of scoring the scale items has been used, the scale score range from 37 to 270, with 153.5 as the mid-value of the acale. In the original scale the 4 points of the 46 item scale were arbitrarily assigned numerical values 1,2,3,4 with the highest score going to the response marked 'T' and the lowest to the response marked 'F'. In the present 39 item scale, however, each item is assigned a different weightage according to its strength in describing the participant situation and the importance it is given in building up the participatory environment, although the scale uses the same 4 response categories—'T', '?T', '?F', 'F'.

Like in the earlier study of student participation in the administration of teacher training institutions, no non-professional institution of higher education reports the score of 37, to be at the end of the scale indicating 'no-participation'. The institutions report the distribution of scores ranging from 54 to 262 with a Mean of 199.08 and S.D. 43.86 in case of teacher participation and the Mean of 136.71 and S.D. 51.74 in case of student participation as given by teacher respondents and the Mean of 164.08 and S.D. 59.44 and Mean of 125.12 and S.D. 37.63 for teacher and student respondents respectively as given by the student respondents. The Mean and S.D. for the combined teacher and student participation as given by teacher and student respondents respectively are 166.92 and 81.99 against 144.6 and 78.85. This suggests that whereas the teachers in general get enough share in the administration of their institution, there is not enough student participation in the affairs of the institution, but there is always some degree of participation by students. Both the respondent groups are observed to perceive some degree of participatory environment in their institution but the teacher respondents perceive it significantly more than the student respondents. The data in Table 1 shows that the Mean score value on the participation scale for teachers and students put together, as given by teacher and student respondents respectively differ so widely that the difference between the two Mean and S.D. values produces the Standard Error of 8.18 and the CR of 2.72 to suggest that there is significant difference between the teachers' and students' perception of the participatory environment of their institution. The difference in the two groups of respondents is also observed when the data is analysed with respect to their perception of teacher and student participation available in their institution. The CR obtained from the data for teacher and student participation from teacher and student respondents respectively are high enough to be significant at .01 level.

These findings from the use of the Participation scale are also supported by the use of the Participation Survey Questionnaire which uses the rationale for measuring participation suggested by Woodburne[16] Tannenbaum[17] and Likert.[18] Woodburne[19] holds that participation is a process of bringing a set of people in an organization in working relationship in democratic setting and that this process is likely to be facilitated if there are alongwith this availability of these processes certain conditions and participation machineries that make possible sharing of ideas by the members of the organization on equality basis. An informal and simple organization structure in which there is free flow of information and ideas accompanied by open and as far as possible oral channel of communication allowing greater degrees of freedom, according to Tannenbaum and Schmidt[20], tend to make the organization more participative in nature. Likert[21] describes the participation process on a continuum and believes that giving or sharing of information is an essential step in the process of participation and one of the first in moving towards more complete participation in which situation leader and subordinate functioning as a group tackle the problem and solve it, using the best available methods of group functioning. A participative organization, therefore, should show evidence of the existence of the participative processes as well as the conditions that facilitate participation. The amount and character of participation in an organization will depend on the presence or absence of these processes and the facilitating conditions for participation and will account for the measure or index of participation in an organization.

This section of the paper attempts to analyse and present the data obtained from the use of Participation Survey Questionnaire and present the data under sub-heads viz. 1. Availability of participation on the process continuum, 2. Conditions facilitating participation, and 3. Participation 'feel'; to determine the status of teachers and students in college administration.

Availability of Participation on Process Continuum

The data in respect of participation process dimension summarised in Table 2 reveals in at least 57.55% teachers and students enjoy the privilege of participation in the administration of their institution. But the respondents feel that all of these processes are not uniformly available in their institution. However, majority of the institutions are inclined towards democratic functioning as they tend to make it participative in character and functioning, though at different levels in the process dimension. It is observed that as many as 45.4% of the total group of teacher and student respondents report that in their

Table 1

SCORES ON THE PARTICIPATION SCALE AS REPORTED BY THE RESPONDENTS

Respondents	*N*	*Teacher Participation*				*Student Participation*				*Teacher and Student Participation*			
		Mean	*SD*	SE_D	*CR*	*Mean*	*SD*	SE_D	*CR*	*Mean*	*SD*	SE_D	*CR*
Teacher	194	199.08	43.86			136.71	51.74			166.92	81.99		
				5.32	6.57			4.60	2.51			8.18	2.7
Student	192	164.08	59.44			125.12	37.73			144.6	78.85		
Combined	386	180.58	55 23			130.95	45.75			155.24	56.8		

institution the administrator never alone decides the plan of programmes and activities of the institution, which implies that the programmes are developed with the help of and may be, in consultation with other members—teachers and students in the college. The percentage of these respondents swells to 75.75% if the response 'seldom' that is checked by 30.35% of the respondents is also taken to suggest the absence of the authoritarian structure of the organization. But the data also shows that the administrator, in many a case, according to 65.8% of the respondents never functions as a member of a team and as a co-partner of teachers and students in working out policies and programmes of the institution and thus does not merge his identity in the group with which he is working, notwithstanding the fact that he allows participatory role to teachers and students on a scale ranging from sharing information on administrative matters to consulting teachers and students on policy determination and programmes implementation. The analysis of data (Table 2) further shows that in most of the institutions participation obtains mainly at the level of giving or sharing of information, which as Likert[22] has held, is the first and an essential step in introducing participation in the organization. 77.55% of the respondents affirm that in their institution the administrator either frequently or seldom informs them the 'why' of policies, programmes and activities of the institution as against 71.0%, 71.6%, 60.6%, 67.74%, 75.4%, 80.4% and 57.54% of the respondents respectively who report that free expression of their views on administrative matters is allowed to teachers/students, administrator formulates plan of programmes and activities and gets it approved by teachers/students, administrator invites suggestions from teachers/students on administration of the institution, administrator gives due consideration to the teachers/students views and suggestions, plan of programmes is developed in consultation with teachers/students and administrative policies of the institution are decided in consultation with teachers/students, in that order. This suggests that higher order participation in general is made available to teachers and students less frequently than the lower order participation. Experts on management have held that participation in administrative policy matters is a higher order participant situation than participation only in programmes formulation and implementation, and that the administrator seeking consultation and giving effective consideration to the views of the participants is a more preferred situation than a mere consultancy situation in which there is practically no effective say of the participants followed by the situation in which administrator seeks only the approval of his decisions by his subordinates. From the data it is obvious that the administrators tend to be more liberal in respect of participation by teachers and students in the determination of the institution's programmes than in policy formulations, which in most cases is considered 'out of bounds' of teachers and students. This inference is drawn on the basis of the analysis of the qualitative responses as well as when these responses are converted into numerical scores by assigning numerical values 0, 1, and 2 to the responses 'Never', 'Seldom' and 'Frequently', respectively.

Further analysis of the data to find out whether or not there is any difference between the percentages of teachers and students perception of the participatory environment available in their institution, reveals that there is no significant difference between the percentages of teachers and students reporting on the existence of all of these ten steps or processes of participation except in two cases viz. 1. Administrator alone decides plan of programmes and activities, and 2. Administrative policies of the institution are decided by the administrator in consultation with teachers/ students, in which cases the difference in the two percentages gives the CR of 3.97 and 2.02 which are respectively significant at .01 and .05 levels.

Against this overall picture of the participatory environment and status for the combined group of teachers and students, when the data is analysed to find out the extent of participation available to teachers and students separately, it is found that teacher participation is a more common phenomenon than student participation. In comparison, it is found that larger number of teachers and students together as well as separately report not only the availability of the various participation processes, but also of the availability of the higher order participation processes to teachers more than to students. The data shows that as against 18.05% of the total group of teachers and students respondents who report that the administrator frequently works with teachers as a co-partner and member of a team in working out the institution's policy and programmes, only 6.25% of them say that the students also get the same status in the administration of the institution as do the teachers. A deeper study of the data reveals another significant finding that the students in general appear to be more depressed than the teachers when they report on the availability of the various participation processes. The students feel that the teachers get the better of, in participation in administration, than they do.

Although there is no basis to compare the teachers participation in policy determination in the professional and non-professional institutions of higher education, it is possible to do so in respect of student participation. A reference to the earlier study[23] shows that in as many as 76.0% of the teacher training institutions, administrative policies are determined exclusively by the authorities and students are not involved at any stage or level in policy formulation process. But in comparison, student participation in policy formulation in non-professional institutions is not that much 'out of bounds' as it is in teacher training institutions. The data shows that according to 61.55% of the respondents, students in non-professional institutions of higher education participate in policy determination of their institution. This and other instances of student participation in the process dimension tends to carry the conclusion that students in non-professional colleges get more opportunities to participate in administration of their institution than those in teacher training institutions.

Table 2

PER CENT OF RESPONDENTS (194 TEACHERS AND 208 STUDENTS) REPORTING ON THE AVAILABILITY OF PARTICIPATION PROCESSES TO TEACHERS AND STUDENTS RESPECTIVELY IN THEIR INSTITUTION. FIGURES IN BRACKETS SHOW THE PER CENT OF STUDENT RESPONDENTS AND OTHERS, THOSE OF TEACHER RESPONDENTS

Participation Processes	*TP*			*SP*			*Combined*		
	F	*S*	*N*	*F*	*S*	*N*	*F*	*S*	*N*
1. Administrator alone decides plan of programmes and activities	T— 22.7 S—(17.5)	25.8 (23.7)	51.5 (58.8)	23.1 (33.6)	36.5 (35.6)	40.4 (30.8)	20.1 (28.4)	24.7 (36.0)	55.2 (35.6)
2. Administrator informs 'why' of policies, programmes and activities of the institution to teachers/students	T— 61.9 S—(22.7)	33.0 (45.3)	5.1 (32.0)	33.6 (12.5)	47.1 (53.9)	19.3 (33.6)	42.3 (23.1)	39.2 (50.5)	18.5 (26.4)
3. Free expression of their views on administrative matters, is allowed to teachers/students	T— 49.5 S—(23.7)	40.2 (34.0)	10.3 (42.3)	29.8 (10.6)	49.0 (47.1)	21.2 (42.3)	36.6 (20.2)	37.1 (48.1)	26.3 (31.7)
4. Administrator formulates plan of programmes and activities and gets it approved by teachers/students	T— 49.5 S—(26.8)	32.0 (33.0)	18.5 (40.2)	27.9 (16.3)	49.0 (51.9)	23.1 (31.8)	38.1 (22.1)	32.5 (50.5)	29.4 (27.4)
5. Administrator formulates policies for institution's administration and gets them approved by teachers/students	T— 42.3 S—(9.3)	35.0 (27.8)	22.7 (62.9)	27.9 (16.3)	49.0 (51.9)	23.1 (31.8)	25.8 (15.4)	31.4 (48.6)	42.8 (36.0)
6. In regard to administration of institution administrator invites suggestions from teachers/students	T— 51.5 S—(15.5)	40.2 (32.0)	8.3 (52.5)	34.6 (12.5)	42.3 (42.3)	23.1 (45.2)	33.5 (23.6)	36.1 (42.3)	30.4 (34.1)

7. Administrator gives due consideration to teachers/students views and suggestions on institutional administration	T— 55.7 S—(22.7)	38.1 (37.1)	6.2 (40.2)	33.7 (15.4)	46.1 (52.9)	20.2 (31.7)	39.2 (24.5)	37.6 (49.5)	23.2 (26.0)
8. Plan of programmes and activities is developed in consultation with teachers/students	T— 70.1 S—(30.9)	23.7 (41.2)	6.2 (27.9)	46.1 (33.7)	34.6 (42.3)	19.3 (24.0)	50.5 (39.9)	32.5 (38.5)	17.0 (21.6)
9. Administrative policies of the institution are decided upon by administrator in consultation with teachers/students	T— 34.0 S—(9.9)	34.0 (29,9)	32.0 (60.8)	31.7 (8.7)	47.1 (35.6)	21.2 (55.7)	21.6 (20.2)	32.0 (41.3)	46.4 (38.5)
10. Administrator works as co-partner- and member of a team with teachers/students in determining and working out policies as well as plan of programmes and activities	T— 35.1 S—(1.0)	21.6 (7.2)	43.3 (91.8)	45.2 (2.9)	9.6 (14.4)	45.2 (82.7)	18.0 (24.0)	14.4 (12.0)	67.6 (64.0)

TP—Teacher Participation *SP—Student Participation* *T—Teacher* *S—Student*

F—Frequently *S—Seldom* *N—Never*

Conditions Facilitating Participation

As stated earlier, the participation process gets accelerated if it is backed up by certain conditions and machineries that are likely to facilitate participation. The Comprehensive Dictionery of Psychological and Psychoanalytic Terms defines participation as the dynamic interplay between two or more systems wherein each is influenced by and influences the other. This interplay or in other words, interaction requires certain conditions which make possible free flow of information and ideas between the members of an organization. These conditions may be the availability of 1. Channel of communication, 2. Consultative machinery, 3. Opportunity for say in administration, and 4. Provision of self-government. The extent to which these conditions are made available to teachers and students for participation and expression of their grievances relating administrative affairs of their institution, alongwith the availability of participation processes at various levels, can be taken as a measure/index of their status and the participatory character of an organization.

Availability of Channels of Communication

Most of the institutions of higher education have provided to their teachers and students channels for participation and expression of their grievances relating administrative matters of the institution. It is observed that as against 17.9% (Table 3) of the combined group of teacher and student respondents who report that none of the two channels is available to them in their institution, 82.1% of them maintain that these channels are available to them and they can make use of it. However, only 61.17% of these 82.1% of the respondents affirm that these channels are frequently made available to them so that they can freely and frequently communicate with the authorities on matters connected with the administration of the institution and their grievances. But majority of the institutions though tend to set up a democratic structure for their organization at least in so far as they provide for the open channels of communication in their institution, but these channels are available more for expressing grievances than for actual participation in institutional administration. This conclusion is derived from the fact that 60.4% of the total group of teacher and student respondents report on their being provided with the channel for expressing grievances frequently as against only 38.4% of them who say that channel for participation obtains in their institution and is frequently made available to them. These findings are further confirmed when the numerical scores obtained by converting the qualitative responses 'Frequently', 'Seldom', and 'Never' assigning these 2, 1 and 0 numerical values is considered. It is found that the overall score for the channel for expressing grievances is 583 against only 470 for the channel for participation which suggests that in most institutions the setting for participation is more virtual than real.

Although from the data in Table 3 it is obvious that these channels are available more to the teachers than the students but the pattern of finding in respect of the availability of the two channels is the same for teachers and students separately as it is for the combined group. For both teachers and students separately channel for expressing grievances is more commonly available than the channel for participation.

Table 3

PER CENT OF RESPONDENTS REPORTING ON THE AVAILABILITY OF THE COMMUNICATION CHANNELS FOR PARTICIPATION AND EXPRESSION OF GRIEVANCES TO TEACHERS AND STUDENTS IN THEIR INSTITUTION

Channels For	*Respondents*	*Teachers*			*Students*			*Combined*		
		F	*S*	*N*	*F*	*S*	*N*	*F*	*S*	*N*
Participation	T —(194)	58.8	31.9	9.3	23.7	48.5	27.8	41.2	40.2	18.6
	S —(208)	40.4	38.5	21.1	30.8	42.3	26.9	35.6	40.4	24.0
	Ts—(402)	49.6	35.2	15.2	27.25	45.4	27.35	38.4	40.3	21.3
Expressing grievances	T —(194)	76.3	20.6	3.1	57.7	27.8	14.5	67.0	24.2	8.8
	S —(208)	51.0	25.0	24.0	56.7	26.9	16.4	53.8	26.0	20.2
	Ts—(402)	63.65	22.8	13.55	57.2	27.35	15.45	60.4	25.1	14.5
Participation and grievances	T —(388)	67.55	26.25	6.2	40.7	38.15	21.15	54.1	32.2	13.7
	S —(416)	45.7	31.75	22.55	43.75	34.6	21.65	44.7	33.2	22.1
	Ts—(804)	56.625	29.0	14.375	42.225	36.375	21.4	49.4	32.7	17.9

Availability of Consultative Machinery

Another condition needed to build up a participant situation and to facilitate the participation process is the availability of some consultative machinery, whether formal or informal. Majority of the colleges (73.6%) do have the practice of holding group meetings of teachers and authorities or teachers, students and authorities to discuss matters of institutional administration. Though from the data (Table 4) it is obvious that the remaining 26.4% of the colleges never hold such formal group meetings, but in the context of some degree of participation reported to be available in all the institutions, it is likely that informal consultations between the authorities and the organization members—teachers and students are sometimes made in these institutions. However, the respondents from institutions holding such formal group meetings of authorities, teachers and students are not unanimous about the usefulness of this type of consultative machinery. Most of these respondents as a group as well as separately as teachers and students assert the worthwhileness of the group meetings but a small minority of them (22.9%) are averse to holding these meetings and feel that nothing much is accomplished and time is just wasted in these meetings.

Against this overall picture of the availability and usefulness of the consultative machinery (group meetings) when the data is analysed to see the difference in its availability to teachers and students, it is found that the teachers in much larger number of institutions get opportunities to sit with the administrator and discuss administrative problems, than do the students. The data shows that students are not a party in these group meetings according to a little more than 33.0% of the respondents as against only 5.2% of the teacher respondents who maintain that in their institution group meetings between teachers and administrators are not organised, and the students not being a party to the meetings of teachers and authorities do not comment on the usefulness of these meetings. However, most of the students, when they are a party to these meetings find these meetings worthwhile and useful and there appears to be no significant difference between theirs and the teachers perception of the utility of this consultative machinery, though a larger per cent of teachers assert their meetings with the administrators more useful than the combined meetings of the administrators, teachers and students. It is of interest to note that the students in the non-professional institutions of higher education find the availability to them of this consultative machinery more than those in teacher training institutions, in which students are a party to such formal group meetings only in 51.94% of the institutions as against a little more than 66.0% of the non-professional colleges.

Table 4

PER CENT OF RESPONDENTS REPORTING ON THE ORGANISATION OF GROUP MEETINGS OF STUDENTS, TEACHERS AND AUTHORITIES AND THE WORTHWHILENESS OF THESE MEETINGS

Group meetings	*Worthwhileness*	*Res*	*AT*	*ATS*	*AS*	*Combined*
Organised	Always	T—(194)	29.9	13.4	0.0	21.65
		S—(208)	—	6.7	0.0	6.7
	Usually	T—(194)	39.2	31.9	0:0	35.55
		S—(208)	—	37.5	0.0	37.5
	Nothing much Accomplished	T—(194)	24.7	18.6	0.0	21.65
		S—(208)	—	13.5	0.0	13.5
	Waste of Time	T—(194)	1.0	3.1	0.0	2.05
		S—(208)	—	8.6	0.0	8.6
Not Organised		T—(194)	5.2	33.0	0.0	19.11
		S—(208)	—	33.7	0.0	33.7
Don't know		T—(194)	—	—	—	—
		S—(208)	100.0	—	100.0	50.0

Abbreviations: *T—Teachers, S—Students, Res—Respondents, AT—Administrator and Teachers, ATS—Adnimistrator, Teachers and Students, AS—Administrator and Students*

Opportunities Available to Teachers and Students for Say in Administration

The availability of a consultative machinery in itself is no guarantee that it will make the organization participative in character. For an organization to become participative it is not only necessary that there is decentralization of power from the top authority but that there is also sufficient opportunity provided in the organization members for expressing their viewpoints and ideas on administrative matters with frankness and without any restraint. And, this could be possible, even when there is no formal consultative machinery provided in the organization. This accounts for the fact that although as many as 26.4% of the colleges do not provide a formal machinery of holding the group meetings with the organization members, 100.0% of the respondents report that teachers and students do get chances to speak out their ideas and feelings about matters connected with administration of their institution, and sometimes they also get opportunities to discuss and share their ideas with the authorities.

However, the respondents like that in the study of teacher training institutions, differ in their observations about the chances teachers and students get to speak out their viewpoints, time made available to them for discussions with the authorities on policies and programmes of the institution and the contribution they make in reaching the group to a decision. Data in Table 5 shows that more respondents, whether they are teachers or are students, are satisfied with the number of chances and time made available to the teachers and students to take part in discussions and to present their point of view on issues concerning the administration of the institution than those who hold that both teachers and students neither get enough chance to speak on administrative matters nor the time made available to them for taking part in these discussions is sufficient. Similarly, greater percentage of respondents appear to favour the active involvement of— teachers and students in group meetings organised by the authorities to discuss the policies, programmes and activities of the institution when they report that the opinions of both teachers and students are either important in reaching a group decision or they are helpful in bringing the group to decision. These findings are very much in tune with the reasons[24] advanced for permitting teachers and students to participate in college administration. Teachers' and students' membership and involvement in a formal or informal consultancy situation is not reported to cause any handicap or to block the progress of discussions and decision making activity, though at the most, as is held by 28.4% of the total group of respondents, it may not serve as a catalytic agent and affect the administrator's decisions. The data (Table 5), however, suggests that teachers enjoy better status than the students in administration. They get many more chances to express their ideas and the time made available to them is certainly much more than is available to students.

Table 5

OBSERVATIONS OF THE RESPONDENTS ON THE NUMBER OF CHANCES TEACHERS AND STUDENTS GET TO SPEAK ON ADMINISTRATIVE MATTERS, TIME MADE AVAILABLE TO THEM TO TAKE PART IN GROUP DISCUSSIONS AND THE WEIGHT THEIR OPINIONS CARRY IN REACHING GROUP DECISIONS

Observations	*Respondents*	*Teachers*	*Students*	*Combined*
Chances to Speak	T —(194)	24.7	10.3	17.5
Many	S —(208)	14.5	6.7	10.6
	Ts—(402)	19.6	8.5	14.05
	T —(194)	54.7	39.2	46.95
Enough	S —(208)	67.3	47.2	57.25
	Ts—(402)	61.0	43.2	52.1
	T —(194)	20.6	50.5	35.55
Not enough	S —(208)	18.2	46.1	32.15
	Ts—(402)	19.4	48.3	33.85
Time for Discussion	T —(194)	43.3	18.5	30.9
Sufficient	S —(208)	24.0	13.5	18.75
	Ts—(402)	33.65	16.0	24.825
	T —(194)	44.3	39.3	41.8
Just sufficient	S —(208)	64.4	52.9	58.65
	Ts—(402)	54.35	46.1	50.225
	T —(194)	12.4	42.2	27.3
Not sufficient	S —(208)	11.6	33.6	22.6
	Ts—(402)	12.0	37.9	24.95
Opinions	T —(194)	27.8	10.3	19.05
Important	S —(208)	14.4	6.7	10.55
	Ts—(402)	21.1	8.5	14.8
	T —(194)	54.7	39.2	46.95
Helpful	S —(208)	77.9	52.9	65.4
	Ts—(402)	66.3	46.05	56.175
	T —(194)	17.5	50.5	34.0
Have no effect	S —(208)	7.7	40.4	24.05
	Ts—(402)	12.6	45.45	29.025

Self Government

In addition to the opportunities to speak out and share their points of view with the authorities on matters concerning administrative policies and programmes, if the institutions also set up certain avenues for the members of the organization to enjoy some measure of self government, the participation process may get a boost up and the members status raised. In the case of the institutions of higher education these avenues could be the staff council and the students union. But the fact that a college permits a staff council and a students union, it does not necessarily insure teachers' and students self government. At least this was one of the findings in the study[25] of student participation in the governance of teacher training institutions. This finding, however, is not borne out by the data in Table 6. As against 75.9% of the respondents who reported on the existence of students union in teacher training institutions, 98.0% and 92.0% of the total group of respondents from non-professional colleges respectively maintain that there is a staff council and a students' union in their college. And, again unlike in the teachers colleges, these organizations also function as the main vehicle of teachers and students activity in the institution according to a little more than 90.0% of the respondents. But these activities may not be necessarily related to the administration of the institution. Therefore, the teachers and students' perception of the measure of self government they enjoy in framing and interpreting policies, their execution and other administrative activities could be an index of their status in the administration. In comparison, the students in the non-professional colleges are reported to enjoy slightly greater measure of self government than those in the teacher training institutions. The data (Table 6) shows that students in these colleges enjoy some measure of self government according to 59.3% of the respondents which suggests that the students union and other such organizations which are generally considered as institutions organised for introducing student self government, do not function as such and in as many as 40.7% of the cases students do not have a sole say in the governance of their union and other such organizations.

This however, is not the case with regard to the measure of self government enjoyed by teachers. There is a significant difference between the perception of self government enjoyed by teachers and students respectively. It is observed that only 6.5% of the total group of teacher and student respondents say that teachers do not enjoy any measure of self government as against 40.7% of those who say of students not enjoying any measure of self government. But almost an equal number (36.3% and 32.9%) of respondents do not seem to be satisfied with the extent of self government they enjoy as they feel that the measure of self government permitted to them is not sufficient. There is no doubt that the University of Delhi statutes and ordinances define the organization/composition, functions and working of all statutory organizations for administration but the data shows that only 56.7% of the entire group of respondents are aware of this fact and although more teachers know of this than the students, but as many as 21.7% of teachers also seem to be ignorant of the basis of these statutory organizations. However, the colleges are not run and administered with the help of these statutory organizations only. The colleges set up several non-statutory organizations also to deal with the day to day academic and non-academic administrative issues in the institution and in most cases (24.4%) the functions and working of these organizations are determined jointly in consultation with teachers and authorities, followed by 19.9% of the cases in which administrators, teachers and students together as a group define the functions and working of these organizations.

The data indicates that non-professional colleges are more democratically organised on mutual consultation principle than teacher training institutions in which case as against only 11.4% of the rerpondents from non-professional colleges, 37.15% of those from teachers colleges maintained that students act as mere pawns and they only carry out the activities as directed by the authorities. All these data including those reported earlier in this paper and the data that follows in Table 7 lead to the conclusion that participation of a 'real' nature obtains relatively more in non-professional colleges than in the professional ones, although it is not uncommon to find participation in these colleges also obtaining at the surface level, which is more extrinsic rather than intrinsic in character.

Table 6

OBSERVATIONS OF RESPONDENTS RELATING TO EXISTENCE OF STAFF COUNCIL AND STUDENTS UNION IN THEIR INSTITUTION, THEIR ROLE IN CARRYING TEACHER AND STUDENT ACTIVITY, MEASURE OF SELF GOVERNMENT ENJOYED BY TEACHERS AND STUDENTS AND MANNER IN WHICH FUNCTIONS AND WORKING OF ADMINISTRATIVE BODIES/ORGANIZATIONS ARE DETERMINED.

Observations			*Respondents*		
			Teachers (194)	*Students (208)*	*Combined (402)*
Staff council exists			98.9%	97.1%	98.0 %
Council main vehicle of staff activity			93.8%	87.5%	90.5 %
Students union exists			91.7%	92.3%	90.0 %
Union main vehicle of student activity			83.5%	77.8%	80.6 %
Measure of Self Government for					
A.	Teachers :	Excessive	10.3%	5.8%	7.9 %
		Moderate	49.6%	49.0%	49.3 %
		Insufficient	31.9%	40.4%	36.3 %
		None	8.2%	4.8%	6.5 %
B.	Students :	Excessive	3.1%	2.9%	3.0 %
		Moderate	25.7%	21.1%	23.4 %
		Insufficient	35.1%	30.7%	32.9 %
		None	36.1%	45.3%	40.7 %
*Working of Administrative Bodies**					
University statutes/ordinances			78.3%	36.5%	57.4 %
In consultation with teachers and authorities			24.7%	24.0%	24.35%
In consultation between students and authorities			5.1%	5.7%	5.4 %
By administrator alone			10.3%	12.5%	11.4 %
Administrator, teachers and students together			22.6%	17.3%	19.95%
Don't know			5.1%	24.0%	14.55%

**The percentages do not add up to 100 as a respondent could check more than one of the above possibilities.*

The Participation 'Feel' or Climate for Participation

The teachers and students perception of the nature of administration and the 'feel' they have of their institution including their own influence on and satisfaction with the administration of their institution is another dimension for assessing the participatory character of the college and the teachers and students status in its administration. From data in Table 7 it is possible to infer that the contemporary administrators of education like to have the collegial and corporate type of structure and organization of higher education, based on the system of collective as well as distributive responsibilities and privileges. Data (Table 7) shows that there is no significant difference between the respondents—teachers and students perception of the form of administration used for teachers and students respectively and that the administrators, in general, do not advocate or practise autocratic method of administration. Although according to about 11.0% of the respondents some of the administrators are inclined to depend on the bureaucratic attitude and machinery for administration, but their number is too small, compared to those who either do not have any defined administrative policy or those who believe in and practise democracy in administration. Majority (61.995%) of the respondents are found to perceive the administration of their institution as democratic and report on the presence of participatory environment, the typical attribute of which is the sharing of information and consultation among authorities, teachers and students on matters concerning administration. According to them in most of the colleges there is a dynamic interplay between the administrator and other college personnel and as such the possibility of one group influencing the other. The democratic character of the administration of the colleges is further ascertained from the teachers' and students' perception of their influence on the administrative decisions and decision-making activities. It is observed that most of the institutions of higher education, like the teacher training institutions, do not remain impervious to the influences of teachers and students. According to nearly 80.0% of the total group of respondents, teachers and students as a group do influence perceptibly or imperceptibly the programmes and activities and whatever else goes on in the institution. But the extent of their influence varies from 'some' to 'a greate deal'. About 70.0% of the respondents maintain that in most cases the influence teachers and students have on administrative policies and programmes amounts only to 'some' and 'quite a bit'.

If in a participatory environment, the organization members are perceived to have their influence on the policies and working of the organization, it is likely that they would also be found to be satisfied with their role in administration of their institution. The data obtained from a group of 402 teacher and student respondents, however, does neither wholly reject nor support this possibility. It supports only partially and apparently suggests that the participatory and democratic functioning of educational institutions and the members'—teachers' and students' influence on the administrative processes of the institution, though may be a factor in the members satisfaction with their role in administration, it may not necessarily be a product of the democratic functioning of the institution. The data shows that whereas nearly 80.0% of the respondents report that the teachers and students influence is perceptible in the administration of their institution, only 47.365% of them report that they are satisfied with their role in administrative decision-making. This picture of the finding may be due to the fact that teachers and students as a group in order to feel satisfied, expect to make greater influence in decision-making, and, as that is not forthcoming in most cases (only a little more than 46.0% of the respondents say that teachers and students make only 'some' influence) they feel dissatisfied with their roles in decision-making on administrative matters of the college. The picture perhaps could be different and teachers and students would be found to be satisfied if they were allowed to play a more active role in administration and conditions created for them to have more influence on administrative decisions. And, this does not seem to be a remote possibility in the context of more teachers reported to be satisfied and also having greater influence in administration of their institution than the students as well as the fact that active steps are being taken for increasing teachers participation more than student participation. These findings thus suggest that it is the dissatisfaction with their roles in administration that both teachers and students are clamouring for more participation and more say in the administration of their institution and since that will bring about greater involvement and identification with the institution, they will be more satisfied.

Table 7

OBSERVATIONS OF RESPONDENTS RELATING TO THE TYPE OF ADMINISTRATIVE STRUCTURE OF COLLEGES, TEACHERS AND STUDENTS INFLUENCE ON WHAT GOES ON IN THE INSTITUTION, THEIR SATISFACTION WITH THEIR ROLES IN ADMINISTRATION AND IF ANYTHING IS DONE TO INCREASE TEACHER AND STUDENT PARTICIPATION.

Observations	*Respondents*	*Teachers* (%)	*Students* (%)	*Combined* (%)
Type of Administration	T —(194)	2.1	2.1	2.1
Autocratic	S —(208)	.96	7.7	4.33
	Ts—(402)	1.53	4.9	3.215
	T— (194)	13.4	9.3	11.35
Bureaucratic	S —(208)	12.5	8.6	10.55
	Ts—(402)	12.95	8.95	10.95
	T —(194)	70.1	56.7	63.9
Democratic	S —(208)	60.58	59.6	60.09
	Ts—(402)	65.84	58.15	61.995

Continued ...

No Policy	T —(194)	13.4	31.9	22.65
	S —(208)	25.96	24.1	25.03
	Ts—(402)	19.66	28.0	23.84
Influence A great deal	T —(194)	14.5	6.2	10.35
	S —(208)	10.6	7.7	9.15
	Ts—(402)	12.55	6.95	9.75
Quite a bit	T —(194)	30.9	19.6	25.25
	S —(208)	30.8	12.5	21.65
	Ts—(402)	30.85	16.05	23.45
Some	T —(194)	47.4	44.3	45.75
	S —(208)	40.4	53.8	47.1
	Ts—(402)	43.9	49.05	46.475
None	T —(194)	7.2	29.9	18.55
	S —(208)	18.2	26.0	22.1
	Ts—(402)	12.7	27.95	20.325
Satisfaction Very Satisfied	T —(194)	3.1	2.1	2.6
	S —(208)	1.0	2.9	1.95
	Ts—(402)	2.05	2.5	2.275
Satisfied	T —(194)	56.7	43.3	50.0
	S —(208)	44.2	35.6	39.9
	Ts—(402)	50.45	39.45	44.95
Dissatisfied	T —(194)	29.9	18.5	24.2
	S —(208)	19.2	26.9	23.05
	Ts—(402)	24.55	22.7	23.625
Very Dissatisfied	T —(194)	2.1	3.1	2.6
	S —(208)	1.9	11.5	6.7
	Ts—(402)	2.0	7.3	4.65
Don't Know	T —(194)	8.2	33.0	26.6
	S —(208)	33.7	23.1	28.4
	Ts—(402)	20.95	28.05	27.5
Steps taken for Increasing Participation	*T —(194)*	*58.76*	*35.95*	*46.905*
	S —(208)	*31.73*	*29.8*	*30.765*
	Ts—(402)	*45.245*	*32.425*	*38.835*

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Organization Culture, Its Perception and the Medical Faculty

SOMNATH CHATTOPADHYAY AND K.G. AGRAWAL

Chattopadhyay and Agrawal (1976) have discussed various theories of organisational culture. Lewin's psychological climate model emphasizes the role of climate as more dominant than previously acquired behaviour tendencies in changing the observed behaviour pattern of group members. Role set theory has, as key assumption, the belief that the behaviour of any organizational performer is the product of motivational forces that derive in largely from the behaviour of member of one's role set because of their constant presence through their role expectation. While role set theory rests on molecular analysis, the climate theory utilises a molar level of analysis. Integrated theory of Litwin and Stringer uses organizational climate as an intervening variable mediating between system factors and motivational tendencies. The perception and subjective responses that comprise climate stem from factors like the patterns of leadership, behaviour of co-workers, and formal system and structure of the organization.

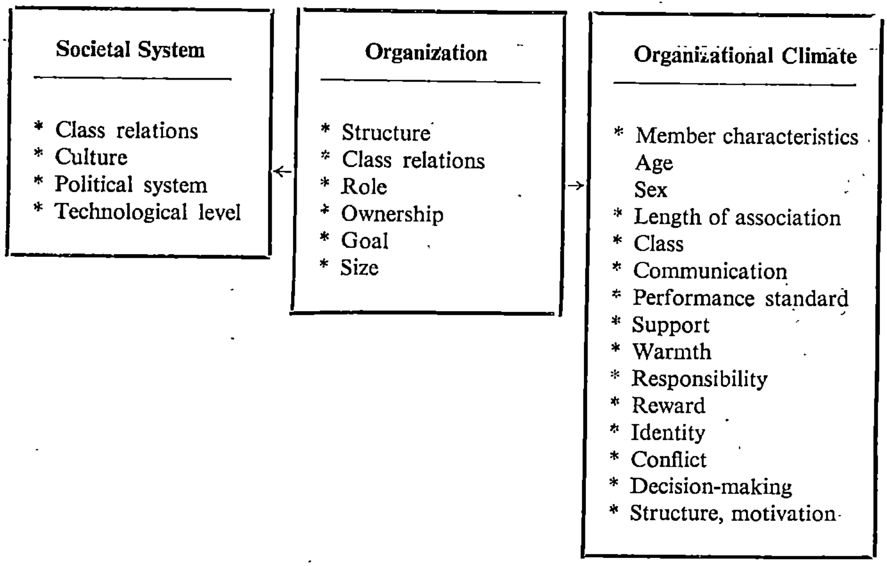
Smith's motivational condition theory emphasizes the role of rewards by giving personal and friendly approval. Socio-personal interaction theory (Baumgartel) considers organization climate as a product of leadership practices, communication patterns and working relationship among persons in division of an organization. Individual behaviour theory recognizing the importance of situational variables lays more emphasis on expectancies.

Management climate model of McGregor lays greater emphasis on behavioural manifestation of managerial attitude which create psychological climate of relationships. This climate is more important than leadership style or the personal style of the superior.

None of the theories of organizational climate take cognizance of production relations in terms of class relations. In industrial organizations production relations are most vital to cognition of prevailing organizational climate.

Societal system has several properties which, being based on economic relations, determine societal system types. Societal system has class relations, culture, political system followed, technological level at which it functions, as important properties. Societal system in effect is a very dynamic concept. It takes care of the temporal dimension which seldom finds place in the Western behavioural science thinking. It also takes care of econo-politico-cultural variables.

Organization would result from the kind of societal system it exists in although in appearance organizations in all systems look alike. Class relations, ownership and goal would perhaps make all the difference. Organizational climate would exist within the organization. Since environment plays upon individuals and their perception is important, member characteristics like age, sex, length of association, class etc. would be important too. In addition to member characteristics other important variables are communication, performance standard, support, warmth, responsibility, reward, identity, conflict, decision-making, structure and motivation.



Figure—1
Societal System, Organization and Organizational Climate

Organizational climate in effect is linked up with societal system through organization. Its' perception is also influenced by member characteristics like age, sex, length of service, class, and organizational variables like communication, performance standard, support, warmth, responsibility, reward, identity, conflict, decision making, structure, and motivation.

Using the above model a study was conducted on a representative sample of faculty from nine medical colleges in India. The study aims at comparing organizational climate as perceived by the faculty as well as to identify climate types, if possible.

Method

Sample: Medical college samples were drawn using random number table. Nine medical colleges were thus selected for the study. Respondents were selected from among faculty members.

Instrument: Organizational Environment Questionnaire developed by the authors (1973) was administered individually. Scores for each dimension were computed.

Results and Discussion

The mean organizational climate score was 220.42 which is 62.91 per cent of the maximum score. This score represents almost the average organizational climate score since Likert scale was used. Medical College 7 had scores as low as 204.73 (SD-19.89) and medical college 2 had the highest organizational climate score i.e. 237.2 with SD 26.48 (Table 1). Medical colleges were compared for total organizational climate. Significant differences were observed between medical college 7 with 2, 3, 6 and 9; medical college 5 with 1, 2, 3, 6 and 9.

With above results it appeared worthwhile to try to compare highest organizational climate college with the college having the lowest organizational climate. Colleges 2 and 7 were such colleges and they differed significantly on O.C. score. Both these colleges had similar scores on performance standard and responsibility and had wide differences on other dimensions. On motivation the difference was highest.

Centile norms for each dimension were prepared. Table2 gives centiles for each medical college on each dimension of organizational climate. It appears that each college represents a unique type e.g. college 1 with high reward and low conflict resolution mechanism, decision-making identity, motivation, structure and support represents a type different from college 6 with high reward, identity, support, communication, decision-making, performance standard, responsibility etc. College 3 is very different although it has highest score on reward but has lowest score on structure and responsibility.

In order to establish any climate type a factor analysis on the lines of Chattopadhyay and Agrawal (1976) was carried out. Colleges were treated as variables and the scores on 11 dimensions were taken as the observations. Varimax rotation of 3 dimensions explaining 68.34 per cent of total variance was carried out.

Tables 2 and 3 explain the 3 factors identified for medical colleges.

Factor I: Reward Orientation

Factor 1 consists mainly of colleges 5, 1 and 7. These colleges are high on reward and low on other dimensions. This factor could be identified as reward oriented climate.

Factor II: Performance Orientation

Medical colleges 9, 6 and 3 characterize this factor. While college 9 is perceived high on performance standard, motivation and responsibility as compared to other dimensions of OC, in case of colleges 6 and 3 on these three dimensions, the perception is lower than other eight dimensions. There seems to be an element of performance orientation *vs.* lack of motivation in this factor. This factor could, however, be identified as Performance Oriented Climate.

Factor III: Structural Orientation

Medical colleges 2, 7 and 8 form factor III. There is emphasis on motivation with structure in colleges 2 and 8 while reverse is true in college 7. Organizational structuring being associated with motivation could perhaps mean that the former is a correlate of the latter. Without organizational structure motivation may not come about. Therefore, we could identify it as structure orientation climate.

In performance and structure orientation, motivation is a crucial factor. In most job satisfaction studies organizational climate has been found to have high association with the former to such an extent that organizational climate was thought to be a redundant concept (Johnnesson, 1973) vis-a-vis job satisfaction. It is interesting to note that even in professional's perception of organizational climate motivation plays crucial role.

Table 1
MEAN, SD AND T RATIO FOR MEDICAL COLLEGE ORGANIZATIONAL CULTURE

(N=120)

Medical College	$n^1=17$	$n^2=10$	$n^3=10$	$n^8=16$	$n^7=11$	$n^4=6$	$n^5=18$	$n^6=15$	$n^9=17$	Mean	SD
1	—	—	—	—	—	—	—	—	—	220.30	22.39
2	1.64	—	—	—	—	—	—	—	—	237.20	26.48
3	1.15	0.78	—	—	—	—	—	—	—	228.60	18.48
8	0.75	1.61	1.23	—	—	—	—	—	—	211.37	34.24
7	2.01	2.93**	4.04**	0,48	—	—	—	—	—	204.73	19.89
4	0.72	1.52	1.81	0.05	0.71	—	—	—	—	212.33	23.44
5	2.33*	3.49**	4.19**	0.51	0.18	0.73	—	—	—	204.78	18.89
6	1.10	0.21	0.37	1.41	2.06*	1.10	2.51*	—	—	233.67	33.93
9	1.16	0.47	0.24	1.47	2.48*	1.28	2.97**	0.51	—	231.12	27.54

* $P<.05$
** $P<.01$

Table 2
DIMENSION-WISE CENTILES FOR MEDICAL COLLEGES

(N=120)

Medical College	Communication	Conflict	Decision-making	Identity	Motivation	Performance standard	Responsibility	Reward	Structure	Support	Warmth
1	57	42	47	44	48	50	58	75	47	48	52
2	75	66	71	58	74	50	57	75	69	60	65
3	53	69	67	68	50	59	35	82	33	62	57
4	55	53	23	47	22	35	35	74	50	48	50
5	39	42	38	31	33	41	38	70	42	35	25
6	65	60	63	75	50	61	61	80	58	69	53
7	37	40	50	36	25	52	49	51	29	27	26
8	38	51	31	33	62	26	55	48	61	44	52
9	55	55	39	52	69	67	68	45	49	50	51

Table 3

FACTOR MATRIX (VARIMAX ROTATIONS) FOR MEDICAL COLLEGE ON ORGANIZATIONAL CULTURE

Medical college	*Factor loadings*			h^2
	Factor I	*Factor II*	*Factor III*	
1	.83	.11	.10	.70924
2	.20	.26	.55	.41689
3	.24	.68	—.24	.57289
4	.49	.48	.24	.52880
5	.91	.27	.03	.90464
6	.50	.63	—.28	.72719
7	.56	.03	—.63	.71784
8	.09	—.42	.87	.94440
9	—.04	—.77	—.14	.61855
Variance	3.41	.170	1.04	
%	37.89	18.89	11.56	

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Notes from Research

ATTITUDES AND BELIEFS OF HARIJAN STUDENTS

For any empirical study involving human beings as respondents it is necessary to have sufficient idea of their attitudes and beliefs, because insight into the attitude and beliefs provides some understanding of how the respondents think, feel, believe and act. The attitudes and beliefs of an individual reflect his social world and experience and also his orientation towards the environment. The attitudes form such an important aspect of the personality of an individual that psychologists and sociologists alike have concentrated upon the study of attitudes. Defining attitudes G.W. Allport writes, "An attitude is a mental and neural state of readiness, organised through experience, exerting a directive or dynamic-influence upon the individual's response to all objects and situations with which it is related".[1] Krech and Crutchfield define attitude "as an enduring organisation of motivational, emotional, perceptual and cognitive processes with respect to some aspect of the individuals world.[2] Sociologists like Thomas and Znaniecki have defined attitude in the following words: "The attitude is the individual counterpart of the social value.... It is the individual tendency to react either positively or negatively to a given social value."[3]

Like attitudes, the study of the beliefs of an individual is also necessary for gaining insight into his personality. Attitudes and beliefs constitute the most reliable indices for understanding the motivational, emotional, preceptual and cognitive processes of which an individual personality is composed. Defining beliefs Krech and Crutchfield further maintain "A belief is an enduring organisation of perceptions and cognitions about some aspect of the individuals world."[4] Attitude being a wider term includes belief as foregoing definition shows. Belief is a unidimensional concept which refers only to the probability or improbability of the existence of a particular object or a particular relationship towards the object."[5] Every society has its own belief-system which "includes all of the cognitions—ideas, knowledge, love, superstitions, myths and legends—shared by most members of the society."[6]

This shows the significance of attitudes and beliefs in understanding the individual's personality system and life organisation.

The Universe and the Sample

The universe of the present study has been constituted by one thousand one hundred and fifteen Harijan students studying in the Lucknow University in the academic year

1972-73. A sample of 300 Harijan students has been selected from the universe with the help of systematic random sampling method in order to collect the necessary information by interviewing them with the help of an interview schedule.

Summary of Findings

1. Majority of the respondents have been found offering prayers. 66% respondents have belief in religion. (See Table 1).
2. 66% respondents are religious-minded and offer their prayers either at home or in temples. (See Table 2).
3. Even today restrictions are being imposed on the religious activities of Harijans. (See Table 3).
4. The exploitation of Harijans is of various kinds. Most of the respondents have a feeling that they are being exploited socio-economically both officially and unofficially by caste-Hindus and also by Muslims. (See Table 4).
5. The respondents have pointed out the various methods of suppression used by the persons of high castes individually and collectively on the official and unofficial planes. Advancement of loan to the Harijan at a very high rate of interest by the Caste-Hindus has been pointed out as the chief method of suppression. All respondents are of the view that their community has been and is being suppressed by persons and groups having a higher rank in the social structure. (See Table 5)
6. The respondent's emphasis on various measures in order of priorty is on encouragement to Harijan children's education, compulsory education for Harijan children up to 14 years, improvement in the economic status of the Harijans and encouragement to inter-caste dining and marriage. (See Table 6).
7. Respondents have given many reasons for hesitation in mixing with the upper-caste students, the main reason being the anti-Harijan feeling cherished by the upper-caste students. The largest single group of respondents does not mix-up with their higher caste counter-parts because of their feeling of superiority and contempt towards them. (See Table 7).
8. A large number of respondents has been found to be participating in different festivals and socio-cultural programmes on an equal plane with caste Hindu students (See Table 8).
9. At the permanent place of residence there are some restrictions being imposed on Harijans in term of the use of various type of facilities, amenities, places and services. Such is the characteristic feature of the permanent residence respondents having in rural areas. However, caste Muslims are not imposing any kind of such restriction on the Harijans. (See Table 9).
10. Reaction of those Harijans who are not allowed to make use of public facilities at their permanent residence in rural areas is quite sharp as the largest single group has expressed the reaction in the form of desire for legal action. (See Table 10).
11. Most of the Harijan respondents feel that the attitude of well placed Harijans is sympathetic towards the Harijans. However, the respondents feel that the attitude of well placed Harijans towards the down-trodden Harijans is indifferent. However, the respondents have expressed the view that down-trodden Harijans are helped by well placed ones through their guidance and suggestions (see Tables 11 & 12.)
13. Among various reasons responsible for the apathy of well-placed Harijans, selfishness occupies the most important place. (See Table 13).

Some suggestions

The following suggestions have been offered by the respondents for liberating the Harijans from exploitation and suppression by the Caste-Hindus.

1. The economic condition of the Harijans should be improved by extending to them facilities for agriculture, small-scale industries, business and other forms of self-employment. Poverty becomes the breeding ground for exploitation and suppression. Economically

weak have always been exploited by the economically strong sections of society. With the improved economic status, the problem of exploitation and suppression of the Harijans by groups and caste of higher rank will be eliminated to a great extent.

2. Compulsory and free education for Harijan childrens can be another effective step in the direction of self-guarding the Harijans from economic exploitation and social suppression. Education brings social consciousness and political awareness among the individual. Socially aware and politically conscious section of society cannot be easily exploited.

3. The Government should take strict measures against those who either restraint or imposed limits upon the utilization by Harijans of public places, utilities and amenities. This measure will create a feeling among the Harijans that they are equally dignified and rightful citizens of the country and will eliminate inferiority complex and social isolation. With the feeling of increasing self-regard and self-reliance the possibility of exploitation and suppression will be lessened to a great extent.

Table 1

TABLE SHOWING THE RELIGIOUS BELIEFS OF THE RESPONDENTS BY THEIR EDUCATIONAL STATUS

Educational status	*Religious Beliefs*					
	Offer prayers Regularly	*Offer prayers Casually*	*Total*	*Offer no prayers*	*Total*	*Grand Total*
Non-Professional						
Under Graduate	30(28.8)	74(71.1)	104(69.3)	46(100.0)	46(30.6)	150(50.0)
Post Graduate	5(38.5)	8(61.5)	13(52.0)	13(100.0)	13(50.0)	26(8.7)
Professional (Under graduate)						
Law	7(9.8)	64(90.1)	71(64.5)	38(100.0)	38(34.8)	109(36.3)
Medicine	—	10(100.0)	10(66.6)	5(100.0)	5(33.3)	15(5.0)
Total	42(14.0)	156(52.0)	198(66.0)	102(34.0)	102(34.0)	300(100.0)

Table 2

TABLE SHOWING THE PLACES OF WORSHIP AND FREQUENCY OF VISIT

Frequency of visit	*Place of Worship*						
	Temple			*Offer prayers at Mosque*	*Offer prayers at Home*	*No prayers*	*Total*
	Exclusively for Harijans	*Shared by other castes*	*Total*				
Regularly	6(37.5)	10(62.5)	16(33.3)	—	32(66.6)		48(16.8)
						102(100.0)	102(340)
Casually	12(40.0)	18(60.0)	30(20.0)	—	120(80.0)		150(50.0)
Total	18(6.0)	28(9.3)	46(15.3)	—	153(50.7)	102(34.0)	300(100.0)

Table 3

TABLE SHOWING THE PERSONS CREATING OBSTRUCTIONS IN THE WAY OF RELIGIOUS PURSUITS

Persons Responsible	*Reasons for Obstruction*			
	LEVEL			
	Individually	*Collectively*	*No response*	*Total*
Caste Hindus	—	28(100.0)	—	28(9.3)
Harijans	—	18(100.0)	—	18(6.0)
No Response	—	—	254(100.0)	254(84.7)
Total	—	46(15.3)	254(84·7)	300(100.0)

Table 4

TABLE SHOWING THE NATURE OF EXPLOITATION OF HARIJANS AND PERSONS RESPONSIBLE FOR EXPLOITATION

Nature of Exploitation	*Persons responsible for Exploitation*				
	Non-Official		*Official*		
	Caste Hindus	*Muslims*	*Caste Hindus*	*Muslims*	*Total*
Economic	265(96.3)	10(3.6)	—	—	275(91.7)
Social	257(94.8)	10(3.7)	4(1.5)	—	271(90.3)
Educational	76(100.0)	—	—	—	76(25.3)
Religious	126(100.0)	—	—	—	126(42.0)
Political	30(100.0)	—	—	—	30(10.0)

Table 5

TABLE SHOWING THE METHOD OF SUPPRESSION IMPOSED ON HARIJANS AND PERSONS RESPONSIBLE FOR SUPPRESSION

Methods of Suppression	*Persons and Group responsible*				
	Non-Official		*Official*		
	Caste Hindus	*Muslims*	*Caste Hindus*	*Muslims*	*Total %*
Advancement of loans at very High rates of Interest	275	—	—	—	275(91.7)
Creation of Obstacles in the education of children	249	—	—	—	249(83.0)
Creation of discord in the ranks of the Schedule castes	75	—	—	—	75(25.0)
Implication in false litigations	185	—	—	—	185(61.7)
Public Humiliation	175	—	—	—	175(58.3)
Abuses	212	—	—	—	212(70.7)
Assaults	96	—	—	—	96(32.0)
Employment of Harijan Children	240	—	—	—	240(80.0)
Inducement for indulgence in social vices	98	—	—	—	98(32.7)

Table 6

TABLE SHOWING THE SUGGESTIONS FOR OVER COMING THE PROBLEM OF SUPPRESSION

Suggestions	*Total %*
Encouragement for free inter-caste gatherings	92(30.7)
Encouragement for inter-caste dining and marriage	285(95.0)
Encouragement for children's education.	295(98.3)
Compulsory education for children upto 14 years	294(98.0)
Improvement in the economic status	290(96.7)
Increase in the No. of reserved seats in Services	295(98.3)
Increase in Reservation of seats in educational institutions	295(98.3)
Increase in the No. of Reserved seats in Legislature	65(21.7)
Suppression of upper caste	40(13.3)

Table 7

TABLE SHOWING THE REASONS FOR HESITATION IN MIXING UP WITH UPPER CASTE STUDENTS

Reasons for Hesitation in mixing up with upper caste	*Total %*
Consciousness of Low traditional caste status	24(18.3)
Low economic status	8(6.1)
Fear of harsh reaction on the part of Caste-Hindus	16(12.2)
Wide cultural differences	39(29.8)
Anti-Harijan feeling of the Caste-Hindus	44(33.6)
Total	131(100.0)

Table 8

TABLE SHOWING THE LEVEL OF RESPONDENTS PARTICIPATION IN SOCIAL ACTIVITIES AS COMPARED WITH THAT OF CASTE HINDU STUDENTS

Items of Participation	*Level of participation*			
	At equal plane	*At subordinate plane*	*At superior plane*	*Total %*
National Festivals	275(96.5)	10(3.5)	—	285(95.0)
Religious Programmes	15(5.3)	265(94.6)	—	280(93.3)
Parties or Social Functions	110(37.9)	180(62.0)	—	290(95.7)
Cultural and extra curricular activities	270(94.0)	17(5.9)	—	287(96.7)

Table 9

TABLE SHOWING THE EXTENT OF THE USE OF PUBLIC SERVICES AND REASONS FOR NOT USING THEM AT PERMANENT RESIDENCE

Public Services	*Using**	*Not using with Reasons*			
		Opposition of Caste Hindus	*Opposition of Caste Muslims*	*Delibrately Keep Off*	*Total*
Wells	90	175	—	35	300
Taps	90	172	—	38	300
Temples	80	177	—	43	300
Shops	300	—	—	—	300
Restaurants	228	30	—	42	300
Tanks and Ghats	225	35	—	40	300
Pictures and Ram Leelas	296	—	—	4	300
Roads and other Public Places	300	—	—	—	300

**Are using exclusively their own community temples and wells.*

Table 10

TABLE SHOWING THE REACTION OF THE RESPONDENTS WHEN NOT ALLOWED TO MAKE USE OF PUBLIC FACILITIES AT PERMANENT RESIDENCE IN RURAL AREAS

Reaction	*Total %*
Internal resentment	5(2.8)
Display of resentment in formal abuses and assaults	32(18.0)
Desire for Legal Action	45(25.4)
No Reaction	95(53.7)
Total	177(59.0)

Table 11

TABLE SHOWING RESPONDENTS COMPREHENSION OF THE ATTITUDE OF WELL-PLACED HARIJANS TOWARDS DOWN-TRODDEN HARIJANS

Attitude of well-placed Harijans	*Total %*
Look down upon with contempts	92(30.7)
Indifferent	67(22.3)
Sympathetic	126(42.0)
Helpful	15(5.0)
Total	300(100.0)

Table 12

TABLE SHOWING THE NATURE OF HELP AND SYMPATHY GIVEN BY WELL PLACED HARIJANS TO PROMOTE AND PROTECT THE INTEREST OF DOWN-TRODDEN HARIJANS

Nature of Help	*Total %*
Financial Help	15(5·0)
Guidance and Suggestions	92(30.7)
Recommendation	34(11.3)
No Help	159(53.0)
Total	300(100.0)

Table 13

TABLE SHOWING THE REASONS FOR WELL-PLACED HARIJANS APATHY TOWARDS DOWN-TRODDEN HARIJANS

Reasons for Apathy	*Total* %
Selfishness	72(45.3)
Pride	26(16.4)
Feeling of Superiority	28(17.6)
Lack of community sentiments	23(14.5)
No opinion	10(6.2)
Total	159(100.0)

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S.P. Rastogi

STUDENT ATTITUDES TOWARDS COLLEGE VIS-A-VIS UNIVERSITY

It has been generally observed that the majority of students doing post-graduate degree courses at colleges are those who had preferred to go to a university and who, though rejected in university admissions, were so strongly motivated towards a post-graduate degree course that they eventually seized upon the chance to pursue such a course, albeit at a college. In this study the attitudes of such students to their college and course were investigated, the hypothesis being that students who went to colleges in the belief that colleges were the second best alternative to university could compare the college unfavourably with university (or what they thought a university would be like) and would therefore, at least initially, show a largely negative attitude towards the college.

The data were collected from three sources. Firstly a questionnaire was filled by 120 post-graduate students (in the subjects of Economics, Political Science, English and History) admitted in an arts college. The questionnaires were given to them after they had completed one month of their courses. Secondly, 20 of these students were selected for personal interview at the end of their first year at a college, when their attitudes were studied in depth. Finally a stratified random sample of students who had just completed the first year of their college course was contacted, by means of selecting all relevant students from a small sample of arts colleges, chosen so as to be representative in terms of geographical region, size and type of the post-graduate course offerred. These students (90) were also asked to fill the questionnaire.

The students who were in their first term at a college were asked first what advantages and disadvantages, if any, they felt a college had over a university, from the point of view of a student taking a post-graduate course. Just over a quarter (26 per cent) thought there were no advantages, compared with only 8 per cent who thought there were no disadvantages in a college compared with a university. A wide variety of factors were mentioned by those who saw either advantages or disadvantages in a college. Factors stated most frequently are shown in Tables 1 and 2.

Table 1

ADVANTAGES OF A COLLEGE COMPARED WITH A UNIVERSITY (FACTORS STATED MOST FREQUENTLY)

	*Percentage**
Classes being smaller, students get more individual attention	35
Teachers are more friendly and approachable	21
There is more freedom and less restrictions	10
Students are encouraged and helped in learning	9
Teachers provide ample material in the subject	8

**The total from which these percentages were calculated is the total number of students who mentioned any advantages*

Table 2

DISADVANTAGES OF A COLLEGE COMPARED WITH A UNIVERSITY (FACTORS STATED MOST FREQUENTLY)

	*Percentage**
Lack of adequate library facilities	29
Social and cultural life (that the university offers) is lacking	20
University degree carries higher status	15
Inadequate hostel accommodation	12
Staff not as qualified as in university	10

**The total from which these percentages were calculated is the total number of students who mentioned any disadvantages.*

Twenty* of these students interviewed at the end of their first year revealed facts that highlighted their attitudes towards college vis-a-vis university. As may be expected, there was a correlation between how well the student was doing in his course and how well he liked the college. Only one out of the 20, having failed in her examination, said that she had enjoyed her first year. Two who had passed their examinations had, however, decided to leave college. Most of the students hesitated to express their opinion of the colleges as a whole, saying that they could only judge the merits of the college they were attending, though many of them thought that in general all colleges were, in terms of superiority, status and advantages, next only to the university. Four out of the 20 had, however, so changed their opinions that they were now glad that they had gone to a college rather than a university.

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*The sample consisted of 12 men and 8 Women; 7 were aged nineteen, 10 aged twenty and 2 over twenty. Eight were doing Science courses, five Social Science courses and 7 other Arts courses. All had originally stated that they would have preferred to get into university.

Three of these students highly evlogized the colleges they were attending, saying that their colleges enjoyed good reputation, that lectures were of high level, lecturers were friendly and sympathetic, and that they could get adequate material in their subjects. Post-graduates being in smaller numbers, as they were, enjoyed more freedom and privileges. The remaining three students who were happy at their college also praised the good teaching, the approachability of the staff and the congenial social climate. The main dislikes of these students were the roll call at lectures, lack of cultural amenities, dull buildings, and lack of friends from the other sex.

Eight of the 20 students showed largely unfavourable attitudes. They complained mostly about the teaching and about the socal life and curricular facilities. They thought the lecturers' knowledge was outdated and the lectures boring. They bemoaned the lack of tutorials, lack of inspiring climate and the fact that their's would be a non-university (done at a college) degree. Their general feeling was that a post-graduate degree in a college (outside the university) was of a lower status, and that they in the college had to work harder owing to lack of academic and library facilities that their counterparts in the university enjoyed. They disdained the fact that there was no liaison between their lecturers and the examiners (as was the case in the case of the post-graduates courses at the university), and that, therefore, their lecturers could give them no guidance on the questions likely to be asked in the examination.

When asked the question "Do you think the colleges, or the universities, or both should expand to admit increasing number of students who wish to do a degree these days," about a quarter of them thought that both should expand, a little more than a quarter that the colleges should expand, and a half thought the universities should take in more students. Those favouring college expansion were of the view that in college individual attention was paid and that it catered for the slower worker who was not up to university standard. Those favouring university expansion felt that colleges should concentrate on graduate courses only and that at college a post-graduate student feels second-class.

Of those favouring university expansion only three were doing arts or social science courses; conversely the majority of those who think colleges or both colleges and universities should expand were doing science courses.

Thus, on the whole the majority of these students (especially those doing arts or social courses) retain a largely unfavourable attitude towards doing a post-graduate degree at a college. Some students who do not show such attitude favour college for the individual attention, friendly staff and aid to the slower worker which the college provides.

Sixty-five per cent of the students doing arts or science courses, who were questioned after one year at a college, had applied for university compared with just under a half (38 per cent) of those doing science courses. All students were asked whether or not they now felt that they would have preferred to go to university or to a college; 63 per cent of those doing arts or social sciences would have preferred to go to a university compared with 42 per cent of those doing sciences. They were also asked if their preference had changed since being at a college. The answers (in total only) are given in Table 3.

Table 3

WHETHER STUDENTS WOULD PREFER TO HAVE GONE TO A UNIVERSITY OR COLLEGE

Now prefer	*Percentage*	*Earlier preference*	*Percentage*
University	59	University	70
College	23	College	15
No preference	16	No preference	13
No answer	2	No answer	2
Total	100		100

A change of opinion, though slight, has taken place, though it has been in favour of college rather than vice versa. This ties in with the fact that whereas just over half the students found their college much as they expected, 25 per cent had found it better than expected compared with 18 per cent who had found it worse than expected.

The students in this sample were asked, as in the case of the first sample, the advantages and disadvantages of a college compared with a university. Similar proportions thought there were either no advantages (25 per cent) or no disadvantages (9 per cent). Some advantages had assumed greater importance and others had declined. Fewer students now thought the college provided more individual attention (though this was still one of the most frequently stated advantages) and more students stressed the fact that they were provided with ample material in the subject. Lesser students found the staff more informal and friendly. The most frequently stated advantages are shown in Table 4.

Table 4

ADVANTAGES OF A COLLEGE COMPARED WITH A UNIVERSITY
(FACTORS STATED MOST FREQUENTLY)

	*Percentage**
More individual attention because of smaller classes	16
Provided ample material in the subject	11
More informal and friendly staff	11
Students encouraged and helped	11
More freedom and less curbs	10
Better teaching	9
Lesser non-academic activities	9

**The total from which these percentages are calculated is the total number of students who saw any advantages*

As expected, the number of disadvantages mentioned increased. The most important disadvantages seen by the students were almost similar to those that were found by the sample questioned at the beginning of their first year. The only noticeable difference was that "less qualified staff" swept to the top of the list, being mentioned by nearly 35 per cent of those who stated any disadvantages. (See Table 5).

Table 5

DISADVANTAGES OF A COLLEGE COMPARED WITH A UNIVERSITY
(FACTORS STATED MOST FREQUENTLY)

	*Percentage**
Less qualified staff	35
Inadequate library facilities	24
Lack of social and cultural life	20
Less prestigeous degree	15
Inadequate hostel accommodation	13
Lack of facilities	7

**The total from which these percentages are calculated is the total number of students who saw a disadvantage.*

Conclusion

From an exploratory study of this nature only tentative conclusions can be drawn. Perhaps more information is required about individual colleges and their post-graduate courses, in order to discover to what extent students' attitudes correlate with such factors as the degree of professor-student contact, the extent to which individual attention is paid, the degree of freedom provided to students and the like. Broadly, however, it is evident that where the college is seen to perform a function distinct from the university, the attitudes of students tend to be more favourable. The college is least favoured where the comparisons with universities are most obvious—for example, in the cultural and social life, the academic atmosphere, and the library facilities.

Perhaps university is a sanctum sanctorum of the elite, intellectual if not economic or intellectual and economic together, who bask in the sunshine of dialectics and intellectual gymnastics spiced with a socio-cultural panorama in the leisurely and generously free environs that are not destined for the less sophisticated and the less endowed, who must wriggle through the drab and dreary path of non-intellectual, competitive exercises dulled by a conspicuous void of things cultural in the temporal and deliberately restrained climate of the college.

S.B. Kakkar

ADJUSTMENT PROBLEMS OF NON-PROFESSIONAL COLLEGE STUDENTS*

The adjustment problems of students play an important role in the total development of the children. Such problems can have adverse effect upon the learning and behaviour of a child. These problems, which the student occupies in his mind, not only hinder him from doing whatever he is supposed to do at a particular moment, but also sometimes lead to indiscipline and in some cases even to antisocial manifestations. The poor adjustment at home and school lead a student to perversion and juvenile delinquency. There are several specific problems which the youth in our country face. Besides this there are several conditions i.e., family and social setting, emotional needs, vocational and educational setting may create many problems requiring adjustment.

In view of this, the present study was undertaken to explore the adjustment problems faced by the non-professional (Arts, Science and Commerce) college students.

Concept of Adjustment

The concept of adjustment is biological in origin. Symonds (1943) wrote, "Adjustment can be defined as a satisfactory relation of an organism to its environment". For the purpose of this study adjustment has been defined as a satisfactory relationship between the individual and the environment in respect of the five areas of adjustment i.e., Home, Health, Social, Emotional and Educational. The adjustment inventory for college students constructed and standaralized by A.K.P. Sinha and R.P. Singh was used to determine the extent of adjustment in the aforesaid areas. The adjustment in these areas has been understood in-terms of adjustment problems faced by the subjects in these areas.

Objectives

The main objectives of the present study were:

(1) To explore the adjustment problems of non-professional (Arts, Science, Commerce) College students.

The investigator is grateful to Dr. R.A. Sharma, Reader, Education Department, Institute of Advanced Studies, Meerut University, Meerut for his insightful guidance in conducting this study.

(2) To compare the adjustment problems of Arts, Science and Commerce college students.

Hypotheses

In the present study the following hypotheses were formulated and tested:

(1) Arts and Science College Students will differ significantly in adjustment problems in different areas of adjustment.

(2) There will be significant difference in adjustment problems between Science and Commerce College students in different area of adjustment.

(3) Arts and Commerce college students will differ significantly in adjustment problems in different areas of adjustment.

Methodology

The study was conducted through the normative Survey method. In the present investigation stratified cluster sampling technique was preferred. The data was collected from 510 cases of non-professional (B.A., B.Sc., and B.Com.) college students from five institutions of Meerut University from each of the age groups, 16-18 years, 19-21 years, 22-24 years, and 25-27 years.

After selection of the sample the Adjustment inventory for college students by A.K.P. Sinha and R.P. Singh was administered on 510 cases. The response sheets of adjustment inventory were scored out with the help of answer key. The subjects were classified in scoring of each area i.e., Home, Health, Social, Emotional and Educational. The obtained data were organised in tabular form and submitted to statistical analysis. The statistical analysis of the data was made by applying the 't' test for testing the significance of difference at .05 an .01 level for the adjustment problems in five areas within the groups.

Results and Discussion

Having calculated the mean and standard deviation of the Arts and Science, Science and Commerce & Arts and Commerce students separately the 't' values between these groups were calculated. The results have been shown in the following tables:

Table 1

SIGNIFICANCE OF DIFFERENCE BETWEEN ARTS AND SCIENCE COLLEGE STUDENTS FOR ADJUSTMENT PROBLEMS

Areas	*Arts N = 178*		*Science N = 175*		*df*	*'t' value*
	Mean	*SD*	*Mean*	*SD*		
1. Home	3.550	2.949	3.502	2.931	351	0.153
2. Health	3.528	2.796	3.382	2.691	351	0.499
3. Social	7.691	2.654	8.182	3.081	351	1.603
4. Emotional	11.814	4.291	12.628	4.940	351	1.651
5. Educational	5.651	2.951	6.125	3.476	351	1.380
Total	*32. 028*	*12.027*	*33.920*	*13.404*	*351*	*1.395*

Table 1 shows that the 't' values between the Arts and Science students in Home, Health, Social, Emotional and Educational areas were 0.153, 0.499, 1.603, 1.651 and 1.380 respectively with 351 degrees of freedom. The 't' values were not significant even at .05 level of significance. Thus the null hypotheses were not rejected and the difference may be attributable due to chance factor. These results indicate that Arts and Science students have no significant difference in adjustment problems in these areas. Hence the first hypothesis in respect of adjustment problems between Arts and Science students is rejected.

Table 2

SIGNIFICANCE OF DIFFERENCE BETWEEN SCIENCE AND COMMERCE COLLEGE STUDENTS FOR ADJUSTMENT PROBLEMS

Areas	*Science N = 175*		*Commerce N = 157*		*df*	*'t' value*
	Mean	*SD*	*Mean*	*SD*		
1. Home	3.502	2.931	2.764	2.810	330	2.340*
2. Health	3.382	2.691	2.987	2.428	330	1.405
3. Social	8.182	3.081	7.687	3.017	330	1.477
4. Emotional	12.628	4.940	10.808	4.377	330	3.559**
5. Educational	6.125	3.476	5.770	2.764	330	1.034
Total	*33.920*	*13.404*	*29.872*	*11.482*	*330*	*2.963***

* Significant at .05 level.
** Significant at .01 level.

Table 2 shows that the 't' value between Science and Commerce students for emotional area of adjustment was 3.559 with 330 degrees of freedom. The 't' value was significant even at .01 level of significance. The null hypothesis was rejected. The mean value of Science students was higher than the Commerce students. It may be stated that the Commerce students have better adjustment than the Science students in Emotional area of adjustment. The 't' value (2.340) for home area was significant at .05 level and not at .01 level. Thus the null hypothesis was rejected at .05 level and not at .01 level. The mean value of Science students was greater than Commerce students in the Home area. It may be said that Science students have more adjustment problems in Home area than Commerce students. The 't' values (1.405, 1.477 an 1.034) for Health, Social and Educational areas were not significant at any level of significance. These results indicate that the Science and Commerce students have similar adjustment problems in these areas. The 't' value (2.963) for the total adjustment was significant at .01 level. It may be stated that both groups have significant difference in their total adjustment. The higher mean value (33.920) for Science students than Commerce students (29.872) further states that Science group have greater adjustment problems than Commerce students.

The second hypothesis is partly accepted in respect of Home and Emotional areas.

Table 3

SIGNIFICANCE OF DIFFERENCE BETWEEN ARTS AND COMMERCE COLLEGE STUDENTS FOR ADJUSTMENT PROBLEMS

Areas	*Arts N = 178*		*Commerce N = 157*		*df*	*'t' value*
	Mean	*SD*	*Mean*	*SD*		
1. Home	3·550	2.949	2.764	2.810	333	2.496*
2. Health	3.528	2.796	2.987	2.428	333	1.895
3. Social	7.691	2.654	7.687	3.017	333	0.012
4. Emotional	11.814	4.291	10.808	4.377	333	2.118*
5. Educational	5.651	2.951	5.770	2.764	333	0 380
Total	*32.028*	*12.027*	*29.872*	*11.482*	*333*	*1.677*

**Significant at .05 level.*

Table 3 indicates that 't' values between Arts and Commerce students for the Home and Emotional areas were recorded 2.496 and 2.118 with 333 df. The results were significant at .05 level and not at .01 level of significance. The null hypotheses were rejected at .05 level. By comparing these results, it seems that the difference in adjustment problems for Arts student was greater than commerce students which was quite natural. The table furtheir reveals that 't' values (1.895, 0.012 and 0.380) in Health, Social and Educational areas were not significant even at .05 level of significance. It may be stated that Arts and Commerce students have similar adjustment problems in these areas of adjustment. Hence the third hypothesis is also partly accepted in respect of home and Emotional areas.

Conclusions

On the basis of the results of this study, it can be concluded that:

No significant difference in adjustment problems exists between Arts and Science students in Home Health, Social, Emotional and Educational areas.

Badami (1969) found that the Arts group has expressed more concern in the areas of Health, Economics, Friendship, sex and marriage, Family Education and vocation, while the Science group has expressed less concern regarding self and society. These results are at variance with the piesent study.

(1) Commerce students have better adjustment than Science students in Emotional area and Science students have more adjustment problems than Commerce students in Home area Both these groups have similar adjustment problems in Health, Social and Educational areas.

(2) Arts students have greater adjustment problems than Commerce students in Home and Emotional areas. No significant difference exists in both groups in adjustment problems in Health, Social and Educational areas.

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G.R. Sharma

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Communications

WORLD CONFERENCE ON CORRESPONDENCE EDUCATION

The XI World Conference of the International Council for Correspondence Education was held at Ashoka Hotel, New Delhi, from November 8 to 15, 1978. It was for the first time that the International Council for Correspondence Education held its world Conference in Asia and that too in a developing country. This Conference in New Delhi which marked the Fortieth Anniversary of the International Council had record representation of 40 countries and 160 participants. The Conference attracted 67 delegates from 20 developing countries.

The first General session on 9th November opened with a dialogue on "A decade of Cooperation between ICCE and UNESCO; possibilities for the future".

The second General Session was devoted to "New Trends in Correspondence Education"—a report on world-wide research jointly sponsored by UNESCO and ICCE.

The Third General Session dealt with overviews on Adult Education and Indian Education.

Besides the General session, 39 group sessions were held during the Conference days and the topics discussed were:

How can we best motivate students as a group and individually?
Games for Conferences
Trends in the ICCE Research Survey, 1976-77.
What do we know about our students?
Activities of the Commonwealth Secretariat in Correspondence Education.
How to use the Library imaginatively in developing correspondence courses.
Student counselling — what works best.
Linguaphone and Language teaching.
Accreditation of Correspondence colleges.
Satellites in Distance Education—Canadian experiments.
How can a Developing Nation achieve its manpower targets in Education at the least cost?
Study Patterns of Successful External Students.
Issues in Counselling the Distance Learner—Workshop format.
Come fly with Me—using flying tutors to teach art and pottery.

Casettes—the glories and the ghestlies
Indian Problems and Achievements in Correspondence Education.
Writing Readable Correspondence Courses—feedback that helps.
Dollars and Sense—some practical considerations in Planning an External studies system at the college and University levels in different cultures.
The most effective way to train correspondence teachers.
Contemplation & Expression.
Promotional and/or Teaching films.
Role of Computer in Correcting student papers and writing individual personal letters to each student.
Pricing of Correspondence Courses.
News round up from around the world—reports by National & Regional associations.
Use of Taped Study material for students in remote areas—a University of Waterloo experiment.
What should the Director of Correspondence studies do to achieve his objectives?
Academic Support and Guidance for Individuals in a Distance Learning Situation.
How to reduce drop-outs?
Carrying Distance Education over 4,000 miles to American Indians.
ULSA trains its students 'in-company' in 22 countries Universidad La Salle de Sud—America experiment.
In what new ways can we increase our enrolments.
How should a teacher respond to a lesson submitted by a student?
Why not a Correspondence Course for Correspondence Tutors?
Outstanding Courses and effective Teaching techniques in Africa.

There were two Business meetings of the members of the International Council for Correspondence Education at which various reports were presented, resolutions passed and future plans discussed.

Bakhshish Singh

THE EXAMINEE : THE NEGLECTED FACTOR IN THE EXAMINATION SYSTEM

Systems have been perceived form different angles. One of them is to consider the system as end-oriented or goal-oriented. Another is to consider the system as a process. In functional terms, the educational system can be looked upon as a process of bringing about the desired changes in the students. Any change initiated needs to be evaluated. In the educational system, examinations have come to stay as a means of evaluation. Gradually, the goal-orientation of the educational system seems to have gravitated to the preparation of students to pass examinations.

This goal-orientation of examinations becoming all important, there has been an almost frenzied effort being made to reform the examination system. Any number of workshops, conferences and seminars have been held on the examination reform, and are still being organized all over the country. A vast amount of literature is available on the examination reform. The most commonly discussed topics centre around the merits and demerits of the semester system, internal evaluation, continuous evaluation, grading and use of the question bank.

Bhalla has complied an Indian Bibliography of University Examination in the post-independent period. He lists 679 articles published on the various aspects of the examination. An attempt has been made to classify these articles under broad categories (See Table 1) to get an idea on the type of themes tackled under the broad unbrella of examination.

225 papers i.e. nearly 33% of the studies reported pertain to the examination reforms in some form or the other. Various terminologies have been used to refer to reform: new plans for examinations; a new perspective; changes in examinations; examination of examination; suggestion for reform; thoughts on examination system; new approach to exami-

nation; new plan of action; reform needed/wanted/essential; ideal examination system; proposals/suggestion for improvement; and so on.

The next bulk of contributions of 152 (nearly 22%) of the papers pertain to some aspect of the mechanics of the examination itself. They include the conduct of the examination, historical perspective of the examination system, the defects of examination; the centralization of the examination, the reliability and relevance of examination and so on.

The relative merits of the various types of examinations, namely, the essay type, objective type, open book, viva voce, etc., are covered in nearly 22 (6.2%) papers.

The relative values of internal and external evaluation are discussed in 36 papers while the unfair means, like copying, cheating and corruption are reported in 35 papers. Achievements in particular subjects, especially, engineering, science and mathematics seem to the objective of 32 papers. Question setting and question bank, comes in the next order of importance. Grading and scaling, whether there should be 5 point scale or 7 point scale or 101 point scale and how to convert numerical values to letter grades and vice versa, should there be normalizing of scores, should the grades be absolute or relative are the points of interest in 26 papers.

Semester System

Crisis and dilemma in examinations, like violence, politics, indicipline, leakage, delay and invigitator's risk have attracted the attention of 21 authors. Abolition of examination merits discussion in 16 papers while failure and wastage have been limited to 10 papers. The miscellaneous group includes articles on mechanica aids like computers, improving teaching etc.

This analysis has been done to bring out the factor, how the examinee himself has been a neglected factor in the study of the examination. The individual has been forgotton in the study of the system. There are just five papers relating to the examinee himself.

The study of Bir Singh[2] (1968) 'Examinee's responsibility for failure; A study', Kansal's[3] (1971) study "An investigation into the attitudes of M.A. and M.Sc students towards examinations", Panse's[4] (1972) "Students opinion on methods of assessment", Roy's[5] (1972) "Examination: A student view", Singh & Akhtars '(1972) "Personality variables and cheating in examinations" are the only five studies pertaining to the examinee himself.[6]

Though it cannot be claimed that this is an exhaustive survey of all the literature available, it does show the great dearth of studies on the impact of the examination on the students.

It can be said that the function of higher education is to help the student get from where he is to where he wants to be. Specifically, higher education is expected to offer rapid transit from adolescence to adulthood, from dull or poorly paid job to more interesting or better paid ones, from slum to suburb, from lower to middle or upper class. To achieve this end, the student has to pass through various curriculum arrangements, teaching practices and evaluation procedures. It is a well understood fact that these three large areas are very closely intertwined and that any innovation and experimentation contemplated should consider all the three areas simultaneously. In addition, any innovation to be meaningful and effective, it should consider the impact of these changes on the persons concerned.

Chickering[7] (1969) has beautifully summarised the present state of education. He points out that higher education once aimed to produce men prepared to engage with the society of man. But in the last few decades, the focus has shifted from men to subjects, from persons to professions. Consequently, men themselves have become subjects—subject to majors, to disciplines, to professions, to industries. As pointed out by Chickering, higher education is still mired in frustration and conflict. He says these conditions will persist until men—not meterials, nor systems, nor institutions, again become the focus of education and the focus of human concern.

From the studies conducted in the higher educational institutions in the west, evidence is available on the impact of various curriculum, teaching and evaluation procedures on the individuals. Summarizing the research, Chickering (1969) says that the most sharply affected aspects seem to be the development of intellectual competence and a sense of competense, development of autonomy, development of identity and the freeing of interpersonal relationships.

Different teaching practices have been shown to have differential effects on the intellectual development. Barnard[8] (1942) reports that lectures are superior for the transmission of information, particularly information specific in nature. Bloom[9] (1953) observed that discussion classes provoke more active thinking than lecture classes. Mc Keachie[10] (1962) observed that to achieve application, critical thinking or some of the higher level cognitive outcomes, students should have an opportunity to practice application and critical thinking and receive feedback on the results.

In awarding the grades, one important question that has been discussed is the merits and demerits of the relative versus absolute grading. The results of a nationwide study by Davis[11] (1964) has shown that in high prestige, intellectually elite institutions, where unusually bright and high achieving students were admitted and where grades were distributed according to a rough normal curve, many students received B's andC's even though they were among the top 10 per cent on any national measure of scientific aptitude and achievement. The consequence of this competitive grading was a reduction in student self-esteem and a lowering of career aspiration. On the other hand, in those institutions where comparative standing is not assessed and students set their own levels, the students might develop an exaggerated sense of competence and self-esteem due to lack of information about the performance of others. Such students sometimes get a rude shock when they come face to face with reality or by some information about what others pursuing similar study have achieved.

In high pressure institutions, where there is a competitive climate and high standards of relative evaluation, the development of individual identity is inhibited. On the otherhand where there is no clear and direct feedback available to the student, he gropes in a hazy atmosphere for he has no basis for self-testing or self-definition.

These are just a few examples of the effect of the evaluation system on the student. Prof. Satish Chandra, addressing a UGC seminar on evaluation and grading organised by the IIT, Delhi in 1976, pointed out that the continuous evaluation system should have an inbuilt student reaction component. Unfortunately no systematic work seems to have been reported on this important aspect.

Examinations are formal occasions through which we try to find out how successfully

Table 1

PUBLISHED ARTICLES ON UNIVERSITY EXAMINATIONS IN THE POST-INDEPENDENT PERIOD, CLASSIFIED ACCORDING TO THEMES

	Title	*No. of articles*
1.	Examination Reform	225
2.	Mechanics of Examination	152
3.	Types of Examination (Objective, essay type, etc.)	42
4.	Internal & external evaluation	36
5.	Unfair means in examination	35
6.	Achievement in particular subjects	32
7.	Question setting and question bank	28
8.	Grading and scaling	26
9.	Semester system	23
10.	Crisis and dilemma in Examinations	21
11.	Abolition of Examinations	16
12.	Failure and wastage	10
13.	Obstacles to Examination reform	8
14.	Studies relating to examinee	5
15.	Miscellaneous	20
	Total	*679*

course aims have been achieved. No examination procedure is 100% reliable or wholly valid in every sense of the term. It is not always possible to assess some important outcomes of a university education. It has been argued that many of the attitudinal aims and some of the higher knowledge aims are not amenable to assessment. Some methods of assessment do not take cognizance of student's emotional needs and difficulties. Students vary in their reactions to assessment procedures. Most course aims can be assessed in more than one way or on more than one occasion. It would sometimes help students if they could choose from these how and when they should be assessed. An evaluation of the various modes of examination to find out its differential impact on the stresses and strains of the students can be a very useful guide in reorganising the examination procedures.

Innovations, experimentation and research designed specifically to test the efficacy of evaluation procedures are needed if educational policies and practices are to derive less from myths and more from evidence and concrete experience.

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J. Indiresan

IMPLICATIONS OF GRADES FOR UNIVERSITY TEACHERS

The Bombay University's Academic Council has resolved to introduce a grading system on a seven point scale for the M.A., the M.Sc., and the M.Com. examinations to be held after March 1978. Under the circumstances it is not known why the present practice of measuring a candidate's performance by assigning a mark to an answer script on the 101 point scale of marking is allowed to continue. This is called the 101 point scale because the examiners are asked to award numerical scores ranging from 0 to 100.

The prevailing written examination will obstruct the smooth working of the grading system if it is not made valid, objective and reliable. Therefore, introduction of reforms in the present form of the end-of-course examination with the introduction of the grading system is called for urgently. Moreover, the examination system, at various educational levels, has a crippling effect on educational goals, curriculum, syllabus, teaching methods, habits of study and instructional material. Experts have carried out a statistical analysis of marks scored by students in the university examination. Such a statistical analysis has shown that when an examiner assigns a mark to a script, there is 50 per cent chance that his error is greater than 5 per cent. It means that when a candidate is awarded mark of 51, the true mark may be either above 56 or below 45 in 50 per cent of the cases. Unfortunately, the community is perhaps not aware of the inaccuracies in our current marking scheme. A number of committees and commissions have deliberated about the written examination system and emphasised that examination reform has become crucial to all educational progress.

Reformation of examination can be hastened if the National Council of Educational Research and Training, the University Grants Commission, state institutes of education and all the Indian universities collaborate, plan and implement a nation wide programme. Joint action to put the idea in practice is the need of the hour. Like social transformation, the examination reforms will have to be backed by persuasive methods, appropriate legislation and authority of the University. This prescription would not be palatable to the taste of many teachers, but it is good and necessary to their academic life. Examination reforms should be a pre-condition for introducing grading system.

Grading is a corrective for the chance factors involved in written examinations. It deals with a sphere performance which written examinations can never evaluate and hence the two are supplementary to each other. The teachers can watch the aptitude and responses of their students to various situations and assess their performances carefully by a constructed set of tests, quizzes, tutorials, assignments and orals. The result of these assessments should be kept separate but side by side with marks of written examinations. Grading should be and will be open and not a secret. Grades are known to the students for each assessment as soon as it is made. The papers or tasks after correction and evaluation should be returned to the students so that they may compare the grading if they so desire. Thus students, may know their mistakes and avoid them in future. This will give a faith in the grading. In this sense grading becomes internal and integral part of the teaching learning process. The main purpose would be to integrate teaching and evaluation and to test those skills and abilities which cannot be tested through written examination.

For the purpose of grading the colleges should be given a system of internal assessment. It should be diversified in such a fashion that it can assess the writing ability of the student, his capacity to do field work or project work, laboratory practicals, his participation in seminars, tutorials, workshops, and social service. The performance of students should serve as a feedback for the student, syllabi, strategies of teaching and learning. Introduction of internal assessment increases the responsibility of teachers in regard to methods of teaching, learning, testing and evaluation. Teachers should, therefore, be oriented in the principles and practices of educational evaluation.

It is necessary to involve the students and teachers in the basic philosophy of the concept of evaluation. This will check the tendency to overestimate or under estimate the performance of students. This evil of subjectivity can be kept under control if the grades obtained by the students are made known to them immediately. It is desirable to discuss these details during the tutorials or individually so that the students are kept in proper frame of mind with regard to their progress. In other words, the system of grading will pave the way for new learning strategies cultivating in the students a sense of participatory learning and participatory evaluation thereby enhancing this educability.

The successful implementation of the programme of evaluation demands a very resourceful and well-equipped teacher who is trained in techniques of evaluation. Assuming our teachers are well equipped in their respective subjects they still require good training in evaluation to adequately equip themselves in order to effectively discharge their duties as teachers and evaluators. This training can well be imparted through short term training courses, seminars, workshops, seminars or week-end meets. The Diploma in Higher Education will have to be reoriented and revised in the light of the coming events and made more functional.

The foregoing indicate the need for innovative and concentrated work regarding, grades, internal assessment and question banks if appropriate designs are to be evolved for accomplishing the goals of educational evaluation. Extensive research and developmental activities are urgently required in this vital field. The innovations referred to earlier have many and varied implications for educational policies, practices and personnel. For example, the role of the professional teacher must change considerably when grading and internal assessment are adopted and the skills of educability are emphasised.

The teacher should act as a facilitator and coordinator of learning rather than as a figure of authority and the sole of custodian of knowledge. He should develop in students the skills and attitudes of learning, sharing experiences, and evaluating progress. Another important implication is that teachers are not just those who teach as a profession; all other members of the society who share their knowledge, skills and experiences with others are also teachers of their own sort, and some of them may even help the professional teachers in particular programmes of formal education. There are similar implications for curriculum. Apart from the change in the curricular objectives and content profiles that the new trends anticipate, a major implication refers to the very nature and scope of the curriculum. The entire "curriculum spectrum" need reconsideration.

To cut a long story short the following specific tasks will have to be undertaken on the spur of the moment to create cooductive climate for facilitating introduction of grading system in our University.

(1) Identification of conceptual elements of grades.
(2) Study of operational aspects of grading system.
(3) Formulation of educational aims and instructional objectives.
(4) Understanding of the concept of reliability, objectivity and validity.
(5) Construction of items, questions and other toils of evaluation.
(6) Comprehension of different components of educational evaluation.

The problem and issues such as these implicit in respect of ends, means, structures and agents of grades in particular and evaluation in general await anxiously intensive enquiry in order to evolve appropriate evaluation strategies for grading, marks and internal assessment.

D.G. Samant

INTERCONVERSION OF AWARDS IN TRIMESTER AND TRADITIONAL SYSTEMS OF EDUCATION FOR THE P.G. PROGRAMME

At present, two systems of education are operating in the country. One is the usual traditional system where marks are awarded and the divisions are based on the overall percentage marks obtained by a student in any particular examination. The other system is the trimester/semester system where the students are awarded a grade and the weighted overall grade point average (OGPA) is used as a measure of performance of a student. The students coming from one system need to be evaluated in the other system for the purpose of preparing joint merit lists for admission to various programmes, fellowships etc. The same problem also arises when a choice has to be made for filling certain positions from among the candidates coming from both the systems of education. It is, therefore, of utmost importance that one should have an interconversion formula which would help in assessing the individuals by converting their awards from one system to the other. There are certain conversion formulae in use but they do not seem to have any sound scientific basis and appear to have been obtained in an arbitrary manner. In this paper, an interconversion formula is presented which is free from such criticism. It has a sound data base and its functional form has been obtained by using the well eslablished statistical techniques.

The Data

For any interconversion formula to be realistic, it is essential that it should be based on the actual performance of the students under the two systems of education. The ideal type of data for such a study would be the one which is based on the performance of the same set of students under the two systems. Obtaining such data is, of course not practically possible because students opt for one system and their performance is evaluated under that system only. It was, therefore, decided to follow the next best alternative where the information on the performance of students under one system of educaton is to be matched against the performance under the other system for the same time period and for geographically continguous regions. This enabled the investigators to keep the other disturbing factors at the lowest level. Also in place of dealing with both trimester and semester systems, we have in this study only considered the former.

An interconversion formula corresponding to the semester system of education can, however, be easily obtained by using the methodology adopted in this study.

Panjab University at Chandigarh was chosen to represent the traditional system of education while the Panjab Agricultural University at Ludhiana represented the trimester system of education. These two universities each operating under the system mentioned are most contiguous geographically. The time period for which the data on the performance of the students under the two different systems were collected ranged from 1973-74 to 1975-76. (See Tables 1 and 2). The geographical contiguity of the two universities and the same reference period ensured the intrinsic comparability of the students. This homogeneity was further improved by considering only the students offering Physics, Chemistry, Statistics, Microbiology, Biochemistry, Botany, Zoology, Economics, Sociology aud Business administration i.e. the subjects grouped under the College of Basic Sciences and Humanities and undergoing postgraduate programmes at both the universities as it was felt that the student quality changed from discipline to discipline and between programme levels. This enabled us to have the performance records of 207 and 669 passed* students over the three year period from the Panjab Agricultural University and Panjab University respectively for the purpose of this study. Since the need for the interconversion formula arises only for the passed students, only such students' data was collected for this study. The results obtained in this study therefore, are applicable for the subjects and the region considered. They can, however, be used as guidelines for similar studies with respect to other disciplines, geographical regions and undergraduate programmes.

Assumptions

The study assumes that the sets of students seeking admission and passing out from the two universities following the traditional and trimester system of education come from the same population of students i.e. they are similar in every respect; the only difference between them is in the manner of evaluating their performance. This assumption is not unreasonable in view of the geographical contiguity of the two universities and a short time reference.

It is also further assumed that one and the same regression equation holds for all the subjects belonging to the group of Basic Sciences and Humanities.

Test for Similarity within Systems

Before pooling the data for the three years for the two systems of education, it was felt desirable to test whether the performance records for the three years within a system differed in any respect. For this purpose it was decided to use the Kolmogorov Smirnov test (Siegel, p.131). This test is capable of detecting any type of differences in the two independent sets of data be it the differences in location or variability or any other characteristic. Since no practically feasible test procedure is available for more than two samples of unequal sizes, it was decided to use two years data at a time out of the available data for three years and consider all possible pairs.

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* The student under the traditional system at Panjab University passes if he secures 40 per cent or more marks and under the trimester system at Punjab Agri. University the student passes if he obtains 3.00 or more OGPA (4.00 basis).

(i) *Traditional System :* For applying the test-procedure, the students of the Panjab University for the academic years 73-74, 74-75 and 75-76 who numbered 239, 226 and 204 respectively were classified into 9 class intervals of equal width (details given in Table 1) and the relative frequencies were worked out for each class. As the sample sizes were quite large, the large sample version of the two sample test was applied. The test statistic

$$D = \text{Maximum} \mid S_{n1}(x) - S_{n_2}(x) \mid,$$

where n_1 and n_2 denote the sizes of the two samples and Sni (x) (i=1,2) stands for the corresponding cumulative relative frequency value, was calculated for 3 sets of two year data and were compared with the table values (Table M, Siegel 1956) for the level of significance $\alpha = 0.05$. The three calculated values are :

$$D_{12} = 0{\cdot}0241,\ D_{13} = 0{\cdot}1112 \text{ and } D_{23} = 0{\cdot}0926$$

where the suffix 12 denotes the first two years i.e. 73-74 and 74-75 etc. All the three values were found to be less than the table values which were equal to 0·129, 0.130 and 0.132 respectively. The null hypothesis that the three sets were similar was, therefore, accepted.

(ii) *Trimester system :* In this case, the students of the Punjab Agricultural University were classified into ten class intervals of equal width according to their OGPA values. This was done for each of the three years (details given in Table 2). Using the same test-procedure as above, the D-statistic values in this case were found to be

$$D_{12} = 0.0532,\quad D_{13} = 0.0598 \quad \text{and} \quad D_{23} = 0{\cdot}0675$$

which were again all less than the corresponding table values, namely 0.24, 0.24 and 0.22 respectively for $\alpha = 0.05$. In this case also, the null hypothesis of similarity of students' performance from year to year was accepted.

The Functional Relationship

Based on the acceptance of the null hypotheses of similarity of data over the 3 years within the 2 education systems, the data for these years for each of the system were pooled and a frequency table prepared for the performance records of the students in the trimester system. The class intervals were of equal width and had the class boundaries as 3.00-3.05, 3.05-3.10 etc. This gave us a frequency distribution consisting of 20 classes over which the distribution of students in the traditional system was superimposed. Since, according to the assumptions of the study, the two distributions were similar, this superimposition enabled us to obtain the class intervals in the traditional system which corresponded to the class intervals of the frequency distribution for the trimester system. The class intervals in the traditional system were so determined that the relative frequencies in the frequency distributions corresponding to the two systems were identical. The midpoints of the class intervals in the trimester system designated as (X) and those in the traditional system designated as (Y) gave a set of twenty (X, Y) values which are tabulated in Table 3.

From the scatter diagram of these twenty (X, Y) values, it was found that the two variables are linearly related. Using the least squares technique, a linear regression of Y on X of the form $Y = a + bX$ was attempted. The estimated regression line turns out to be

$$Y = -57.1145 + 33.5573\ X \qquad \ldots\ldots (5.1)$$

with the standard error of b being equal to 0.6607. Student's t was applied to test the significance of the regression coefficient value and was found to be highly significant (at 1 per-cent level). Also, the value of the correlation coefficient was found to be equal to 0.997 thus showing that as high as 99.4 per cent of the total variation in the Y-values is captured by the linear regression fitted.

In view of the above result and the observed scatter diagram as well as of the fact that fitting of higher degree polynomials did not result in any appreciable reductions in the residual error mean square, the linear fit was accepted as satisfactory. Apart from these statistical considerations, the linear relationship is also operationally very convenient.

It may be pointed out here that strictly speaking the regression equation (5.1) is applicable for calculating the percentage equivalents for given OGPA values in the range 3.00 to 4.00. For getting the OGPA equivalents for given percentage values (above 40 percent) however, the regression of X on Y is needed which in the present case is found to be:

$$X = 1.7145 + 0.0296\ Y, \qquad \ldots\ldots \quad (5.2)$$

with the standard error for the regression coefficient as 0.00058. Since the value of the correlation coefficient is very high, it turns out that the two relations (5.1) and (5.2) are for all practical purposes near-identical, so that either of them can be employed for interconversion purposes with little error of consequences.

Limitations of the Study

It may again be emphasised that the findings reported here are relevant to the situations covered by the data used for the study. Thus, the interconversion formulae obtained in (5.1) and (5.2) are applicable to the region of the study and for the subjects falling under the broad group of Basic Sciences and Humanities.

It is nevertheless evident that the methodology adopted here holds considerable promise and great scopes for enlarging the present investigation. Future studies on similar lines can thus be conducted for different geographical regions, disciplines and educational levels. It is also of considerable importance to base such studies on performance records of all the students, including failures, as the pass percentages differ consideraby in the two systems.

Table 1

FREQUENCY DISTRIBUTION OF THE PERFORMANCE DATA IN TRADITIONAL SYSTEM (PANJAB UNIVERSITY, CHANDIGARH)

Years *Percentage Marks*	*1974*	*1975*	*1976*
40-45	12	10	12
45-50	17	21	18
50-55	59	54	55
55-60	26	27	35
60-65	58	55	47
65-70	37	34	23
70-75	20	21	10
75-80	9	3	4
80 and above	1	1	0
Total	*239*	*226*	*204*

Table 2

FREQUENCY DISTRIBUTION OF THE PERFORMANCE DATA IN TRIMESTER SYSTEM (PUNJAB AGRICULTURAL UNIVERSITY, LUDHIANA)

Years *OGPA*	*1973-74*	*1974-75*	*1975-76*
3.0 — 3.1	8	8	9
3.1 — 3.2	3	3	5
3.2 — 3.3	7	11	13
3.3 — 3.4	3	8	4
3.4 — 3.5	11	14	10
3.5 — 3.6	12	8	14
3.6 — 3.7	4	8	7
3.7 — 3.8	6	7	6
3.8 — 3.9	3	4	5
3.9 — 4.0	2	3	1
Total	*59*	*74*	*74*

Table 3

MID POINTS OF THE CLASS INTERVALS IN TRIMESTER (X) AND TRADITIONAL (Y) SYSTEMS

X	*Y*
3.025	43.62
3.075	47.45
3.125	49.20
3.175	50.00
3.225	50.92
3.275	52.42
3.325	53.81
3.375	54.81
3.425	57.05
3.475	59.65
3.525	61.18
3.575	63.07
3.625	64.73
3.675	66.04
3.725	67.29
3.775	69.81
3.825	70.85
3.875	72.40
3.925	74.75
3.975	78.30

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M.L. Bansal and S.K. Singla

SERVICE AND MAINTENANCE OF SOPHISTICATED SCIENTIFIC INSTRUMENTS IN UNIVERSITIES

A large variety of sophisticated scientific instruments are in use in Universities and Colleges, Institutes of Technology, National Laboratories, Medical Research Institutes and Hospitals, and Industries. These instruments are generally very costly and are used for advanced research and development or teaching work or process control in industrial units. Most of these instruments used to be imported about a decade ago, but with the development of indigenous technology, some of these are being manufactured in the country by a few leading manufacturing concerns both in public and private sector, though with lesser reliability and sophistication than the imported instruments from the developed countries. In most cases, the indigenous instruments are priced at a higher level-sometimes by a factor of two or three than the imported instruments. It is certain that the reliability and sophistication of indigenous instruments will improve in future although there is a liklihood that the gap in the two varieties may not decrease or in effect may even increase with the result that there will be always an inherent demand for more sophisticated imported instruments in the scientific community. This in turn points to the need for building a strong base for providing service and maintenance facilities for both the indigenous and the imported instruments.

Special Nature of Instruments

Service and maintenance of scientific instruments presents its own peculiar problems. In the first place, the number of these instruments in a university or research establishment or even in a particular region is very limited. Secondly, the spares for these instruments are not readily available although some suppliers recommend the users to get these say upto about ten percent of the cost of the main instrument alongwith its purchase. Further even a given instrument of one type may vary widely from one manufacturer to the other and sometimes even from one model to other from the same manufacturer. Again there is an inbuilt desire of the manufactures to change the model quite often, sometimes even within a year, mostly on account of continuing improvement in design and fabrication and consequent sophistication. All these factors add to the problems of a research worker and the institute where the funds are severely limited and there is always a competition in the scientific community for better accuracy and reliability of results. It is to be granted that there is always a need for more automation and sophistication as also for accuracy and reliability.

The problems of scientific instruments differ markedly from the commercial instruments of popular use like broadcast receivers, television receivers, tape recorders, etc., on one hand and the industrial instruments for process control in major industries like steel making, petroleum purification, fertilizers etc. on the other. In the first case, there is a big demand and the number is very large so that trained technicians and mechanics are readily available to rectify any faults developed by this type of instruments. In the case of industrial instruments, there is a large cost factor and service and maintenance engineers form part of the regular establishment for the plant. In the case of scientific instruments, however, the repair is done either by service engineers of the suppliers or by the scientist or research worker himself. Regular technicians or mechanics on the staff of a University department or College or a Research Institute can handle minor repairs but the major fault finding and repair cannot be done by them.

Most of the manufacturers or suppliers tend to forget the service part once they have their accounts settled with the buyer. This is so particularly with the imported instruments and even in the case of indigenous instruments the service provided by the suppliers is generally very inefficient and unreliable. Cases have been there when freshly imported instruments could not be put into use for a long time either because some vital accessory was not obtained or due to the breakdown of the equipment during transit. As the shelf-life of most of the instruments is between five to ten years the loss of time in putting the equipment into use initially and later on after a breakdown is very important keeping in mind the cost factor and time involved in the purchase of the equipment.

Keeping these factors in view, steps have been taken to tackle the problem of service and maintenance of scientific equipment by a few national organizations. The leading manufacturers like, Electronic Corporation, Hindustan Machine Tools, Bharat Electronics Limited etc. have been trying to improve their after sales services. For the imported equipment, the CSIR laboratories, particularly the National Physical Laboratory, started this work a few years ago. Later on another CSIR organisation, Central Scientific Instruments Organisation (CSIO), has opened a number of service stations at several places and has been making continuous efforts to acquaint the users of instruments of these facilities through group meetings.

Service and Instrumentation Centres

A basic step of a very wide and far reaching importance has been taken by the UGC recently by establishing Service and Instrumentation (SI) centres at several Universities with explicit aims and objectives of providing service and maintenance facilities for laboratory and research instruments, fabrication facilities for attachments and parts for instruments, training of instrumentation technicians and scientists and finally research and development work on instrumentation. Each centre is to have a central workshop with facilities of mechanical and wood workshop, electronic workshop, glass blowing shop, optics workshop and photography. With the basic repair and fabrication facilities having been provided through these workshops, each centre is to have central laboratories for sophisticated instruments which are to be used by more than two research groups and other central facilities which may be used by several departments.

R & D Work and Training of Instrumentation Scientists

By combining the research and development of instruments and training of technical and scientific personnel with service and maintenance work in these centres, which have been given the status of University teaching departments, the UGC has improved upon the earlier concept of central workshops which were only repair sections. A long felt need of development of instrumentation departments in the Universities has been met through these centres. In addition, the science teaching departments have been asked to have a course component of appropriate instrumentation to develop indigenous capability in the design and development of instruments and their attachments or components needed for research and development work at postgraduate level. There is already a provision for electronics as a subject of study at the under-graduate level and a course work in instrumentation at this level can be of wider scope for the students.

As these centres develop, it is hoped that they will take up the service and maintenance work of sophisticated instruments, keep a record of their working and feed this information back to the manufacturers who can modify and improve their products through a coordinated effort of users and manufacturers. By extending the various facilities of SI centres to colleges, a large number of laboratory instruments which are out of order can be set right. It is observed that service facilities are almost non-existent in most of the science colleges. Government colleges get regular grants for science laboratories and can buy new equipment if the old one is out of order but the situation in aided colleges is very difficult because of paucity of funds. Any instrument not in order is a loss to the students and the institution and should be put into service, if possible. Again, there is a continuing requirement of improvement in laboratory exercises in science classes requiring new equipment. Some of these instruments can be designed and fabricated at a low cost and supplied to the colleges by these centres. It is well known that small scientific manufacturers price their instruments at a high premium without adequate quality control. The SI centres can work out the cost factors and keep a watch on the quality of instruments in the market and suggest better instruments for the colleges.

There has been a long felt demand for the proper training of college and university laboratroy staff. SI centres can organise certificate and diploma courses for both the in-service staff and fresh candidates. With a continuing improvement in the grades of laboratory staff it is essential that they are given better training in the maintenance and service of laboratory instruments.

Thus it will be observed that the various organisations at the national level, like the UGC, CSIR laboratories and major manufacturers, are playing very vital roles, which are complementary in nature, in the development of scientific skill in instrumentation in the country. While the CSIR laboratories have taken very timely steps for the service and maintenance of sophisticated instruments available with industry, research laboratories and universities, the UGC has adopted a more basic and fundamental approach for training of instrumentation technicians and scientists in addition to providing facilities for service and maintenance of instruments in universities and colleges and other institutes. It is to be hoped that these steps will help in creating indigenous capability in design. and development of more advanced instruments for both pure and applied work in various areas of science and technology.

Mohinder Singh

WHAT AILS THE INDIAN UNIVERSITY?

An eminent scientist in an Indian University was once invited to participate in an International conference in the United States of America. The scientist had previously been elected on the Executive Committee of the Organization of the conference and was also to chair one of the sessions of the conference. The organization would provide maintenance allowance to the scientist during his stay in the United States, expecting the home institution to meet his travel expenses; this is the normal practice in the West. The scientist tried to get his travel expenses from his university. Indian universities do not normally have huge funds for such activities. Nonetheless, the university in question had some funds for general purpose, and, after a meeting of the Unassigned Grants Committee, the scientist was informed that, according to rules, he could receive support upto a maximum of Rs. 2000. This was a meagre amount, inspite of the fact that the cost of the return ticket to USA had been considerably slashed owing to celebrations of the American bicentennial year. The scientist then wrote to various State and Central agencies requesting them to support his travel to USA. Some of these agencies kept mum while others asked him to furnish further information regarding his standing, his previous publications, a summary of the paper he was going to read at the conference, etc. After this he was informed by some agencies that the matter would be considered in the next meeting of such and such committee of the agency—there is hardly an agency in India where such matters are decided on the spot. The scientist finally did receive partial grants from three agencies, which were sufficient to meet his travel expenses.

This is a rather fortunate story in the sense that the end was good. Nobody, however, seems to have given much thought to the procedure involved, the agony and the anxiety faced by the scientist, the last minute rush to get the clearance, and so on. Not many persons are so fortunate and many a scientist has waited in vain before the formalities are completed to find that it is already too late.

On the other hand, the Western counterpart of the Indian scientist would only write a note, or simply telephone, to the appropriate authority expressing his desire to attend conference, and within a few days would receive the green signal along with the air ticket, leaving him plenty of time in his pursuit of academic excellence.

Administrative Procedure

The administrative procedure involved in getting any work done in most Indian institutions, and particularly universities, is so complicated, time consuming and even frustrating that there is hardly a chance for achieving excellence in any field. In a typical

Indian university, the application of a faculty member for earned leave would pass through the following channels; faculty member — head of the department — assistant registrar (academic) — vice-chancellor — assistant registrar (accounts) — assistant registrar (academic) — faculty member. Within each channel, there are further sub-channels. For example, in the office of the A.R. (Accounts), the application would be handled by at least three persons who would make a record of leave availed by the person concerned and would inform the A.R. (Accounts) that everything is in order. To make his presence felt, each person in the above chain or sub-chain would write on the application a note for the next person in line. The procedure often takes three to four weeks. (If the application is for study leave, it may take even more time.) If the faculty member is in a hurry, he may from time to time visit the various sections of the university tracing the progress of his application and quicken the process by taking it personally from one section to the other. It is hardly realized that time lost by the faculty member is time lost by the university. Officers who deal with and control finances, and who are so pained to see the expense of one extra paisa have no consideration for the wastage of time.

Once again, it is of interest to compare the situation in the West. A faculty member in a Western university wishing to avail leave, merely orally informs his immediate boss of his intention. No ink is spoilt, and no third person — not even the head of the department — is involved in the process. There are no written rules as to how much leave of which kind can be availed by an employee. Much of the work goes on very smoothly according to unwritten norms, with no need to keep voluminous records. One can only imagine what a fantastic saving of time and labour this amounts to.

Academics versus Administration

There is a constant tussle between the academic staff and the administrative staff, each group trying to establish its superiority over the other. Often a lopsided picture of the whole set up emerges as to who is working for whom. Once a teaching department in a university wanted to subscribe to an American magazine. Financial grants were made available by the University Grants Commission and budget provision for the magazine made. An invoice for the annual subscription was called from the editor of the magazine. The vice-chancellor's sanction was obtained, and after completing the formalities, all relevant papers were sent to the accounts section of the university for preparing a dollar draft for a certain amount. The papers came back to the head of department with a note asking him to get the current exchange rate verified from a bank. This raises an open question: Whose job is it to verify the exchange rate — the accounts section or the teaching department? The matter had to be referred to the vice-chancellor and it took quite some time before the subscription was sent.

Similar situations arise in other matters such as purchase of equipment, etc. The thinking behind this behaviour seems to be that one who is in need should do all the work. The accounts section would merely write the cheque and the appropriate officer would sign it after seeing that all papers are in order.

It is necessary to go down to the roots and consider the *raison d'etre* for the existence of the two groups — the academicians and the administrators. A faculty member is paid for teaching students and producing good research work for the university and for the nation. An administrator is paid for helping the students and the faculty members in their study and research, enabling them to do their work most efficiently. Administration is like a machinery. It is a means and can never be an end in itself. Just as the quality and the standard of the final product of a machinery depend very much on the quality and standard of the machinery itself, the quality of academic output depends to a great extent on the quality of the administrative machinery behend it. No matter how skilled and intelligent workers are employed on a substandard machine, there is a limit to the quality of its output. This limit can then be raised only by increasing the efficiency and the quality of the machine.

Political and educational leaders in our country are in the habit of saying that our universities should do high quality work, that they should attain heights comparable to any university of the Western world, and so on. Pundit Jawaharlal Nehru once remarked that inspite of many years of independence, India has not produced a society like the Royal Society of London. My contention is that Indian scientists can do all this and attain great heights. They have the basic ingredients, and are no less intelligent than their Western counterparts. They are hard-working and knowledgable. The faculty members are motivated and capable of top-ranking original work. But — and this is a big "but" — instead of getting the necessary support from the associated administration, they find their path strewn with administrative hurdles.

Academic Achievements

Inspite of this, the academic community in India has something to boast of, at least some achievements which can be compared with those in the West. On the other hand, is there a single incidence concerning administrative procedure which can be compared with the corresponding procedure in a Western country? Our academic standard, quality, level and achievements are being severely limited by the administrative machinery involved, and there is hardly a chance of seeing much improvement in these standards without raising the administrative standards. An institution, an organization or a country as a whole cannot have its academic level much higher than its administrative level.

In the West, the two levels coexist and rise together. The administration constantly thinks of how to improve its ways and efficiency so that the system can run smoothly and make rapid progress. On the other hand, one suspects that the administration here constantly thinks of how to put more hurdles in every academician's way. If the progress slows down, the administration is the least concerned.

The blame is asmuch on every single administrator or officer as on the whole machinery, the set up, the procedures involved, which need a major overhaul. Officers in the administration try to shirk their responsibilities and avoid taking decisions every one passing the buck to his superior. The result is that every matter goes right upto the vice-chancellor.

The academic life of a faculty member has many facets. In addition to teaching and research work, he has to be involved in other aspects such as framing of syllabi, buying equipment for the laboratory, participating in and organizing academic activities such as conferences, symposia etc. At each stage, he finds that, rather than being assisted, he is being pulled back by the administration. One gets the impression that the administration would be happier if the academicians did not insist on enlarging academic programmes and attending conferences, etc. According to them it would be money well-saved.

Faulty Concepts

Much time is wasted because every matter, however trifle, has to pass through many committees. A typical Indian university may have the following committees: building and space committee, scholarship and freeship committee, canteen committee, unassinged grants committee, finance committee, research degree committee (one for each subject), board of studies (one for each subject), Academic Council, Court or Senate, Executive Council. Every matter may have to go through one or more of these committees.

No sooner a person achieves eminence in his field than he is dragged into bureaucracy and turned into an administrator. It is common knowledge that all heads of departments in Indian universities have to spend much of their time for administrative work than for academic work.

It is often argued that stringent and complicated administrative procedures have to be adopted in the Indian system owing to a lack of funds. If there is less money, it is said it has to be channellized and distributed properly through rules and regulations and it has to be ensured that funds are not wrongly utilized. In my view, this is not the real cause, at least not the major one. In fact, many funds often lapse or cannot be properly utilized due to red tape. Moreover, no university in the world would say that it has enough funds for all activities. It is a question of proper and efficient utilization of available manpower and resources which is possible if the number of hurdles is minimized. It is a question of attitudes. In reality, a major portion, if not all, of research funds for faculty members does not come from the university but from other agencies such as the University Grants Commission, the Council of Scientific and Industrial Research, the Indian Council of Social Science Research, and the like. Inspite of this, the university administration exercies stringent control over the funds while the faculty member has the least freedom in utilizing the grant which is sanctioned exclusively to him by some other agency.

Alexander Graham Bell's telephone is a useless invention in the Indian circumstances. Not the smallest of jobs is done without putting things down on a piece of paper. A facutly member once telephoned to an assistant registrar concerning a certain matter and explained his case. After listening to him carefully and agreeing with him, the assistant registrar asked the faculty member to send a "note" so that he could see to it!

Some Suggestions

For every purchase, various sanctions have to be obtained which are known as administrative sanction and financial sanction. A novice will never understand which is what. There are other time-consuming formalities which must be completed. For the purchase of any item costing more than a few rupees, at least three quotations (statements from suppliers quoting their prices for the item) have to be invited before placing an order. The order must be placed to the supplier who quotes the minimum price. If it is felt that, for reasons of quality, the item should be purchased from another supplier who has quoted a higher price, proper justification has to be given. If there is only one firm supplying a certain item, as often happens with specialized scientific instruments, a certificate has to be obtained from the Development Commissioner (Small Scale Industries) of the Central Ministry of Industrial Development and/or the Director of Small Scale Industries of the concerned State, to the effect that they are not aware of any other suppliers of the item, on the basis of which the university authorities may waive the condition of three quotations.

It is well known that this procedure is a pure farce. It is an open secret that many firms give three quotations in the name of fictitious firms to save the time of their customer. The customer gets exactly what he wants and the necessary formalities are also completed.

Audit proves to be another nightmare. Every now and then auditors come from the government audit and accounts department to check the accounts and expenses incurred during a specified period in the past. They raise fresh objections and point out innumerable lapses in the formalities — some — body's signature is missing at some place, a certificate that "the amount has been actually spent on the items mentioned" has not been enclosed along with the accounts' etc. Once the auditors called the sports officer of a university to explain why the receipt of prizes by players was not obtained and enclosed along with the accounts of expenses in connection with a prize distribution function, which was held one and a half year before. When it was explained that the prizes were given away by the vice-chancellor himself and it was never a custom to ask the prize winner to sign a piece of paper while receiving the prize, the auditors seemed to be satisfied but gave a warning that this point should be noted for future.

Auditors seem to raise funny and meaningless objections merely for the pleasure of it. A personal meeting with the auditors once supported this view. They admitted that they had to raise some objections to show to their superiors that they have indeed checked the accounts thoroughly. If they go back without raising any objections, would there not be a suspicion that they have whiled away their time and certified that the accounts were correct?

I realize that this aspect of the problem has no solution within the domain of a university, but extends beyond to the government level. It is all the more necessary, therefore, that all concerned authorities should make efforts to solve this problem. The first step, of course is to appreciate that there is a problem. What do we want our universities to be? What are our expectations and how best are we going to fulfil them? Are we contributing to the betterment of our educational institutions or we are hampering their progress (intentionally or inadvertently)? There are various precious commodities such as time, initiative, originality, enthusiasm, manpower, resources, money, etc. Which commodity do we value most and which next in different circumstances? Which commodity are to, trying to save by our actions and at the cost of which other commodity?

Basically the whole problem arises from the conflict of authoritarianism versus broader autonomy. I think it will greatly speed up the progress of our universities if the element of authoritarianism is reduced and more responsibilities along with corresponding powers are delegated to the heads of departments and to individual faculty members. The point to consider is whether, if we give more importance to time, originality and enthusiasm even at the cost of financial loss to begin with, it would result in added monetary gains in the end for the university and the nation or not. I think yes. This is exactly what the Western countries have shown.

I think the power to grant leave to a faculty member should be vested in the head of a department instead of in the registrar or the vice-chancellor. The power to utilize the research grants allocated to a faculty member should rest entirely with the person himself without the need of any sanctions from the head of department or higher authorities. This would considerably encourage the faculty members to devote their time and energy to academic problems. I am aware that these suggestions would cause raised hairs in the highest circles. Would there not be misappropriation of funds, they would shout! I think the fears are unwarranted. Even if there is some misuse, this would be compensated by the added output and the sum total would be positive. In fact, is there no misuse of power today? Don't malpractices occur even with the present strict rules, regulations, an checks and counterchecks? In fact, in the present set up, we are neither saving money nor gaining other commodities.

The vice-chancellors of Indian universities today are occupied with such petty matters that they have little time for any constructive work. In my opinion, the first and foremost duty of a vice-chancellor should be to fetch money for the university from different State and Central agencies. He should be able to formulate different projects and schemes with the help of his faculty members and to persuade public and private agencies to support them. This could only be done if he relieves himself of petty responsibilities even if it means a considerable loss or dissemination of "power".

Conclusion

Perhaps the situation in some institutions is better than the picture painted above. For example, the Tata Institute of Fundamental Research, Bombay, the Indian Institute of Science, Bangalore, and the five Indian Institutes of Technology have a better academic tradition. Compared to these, the universities, and particularly the new ones, lack healthy academic traditions, and it is here that the administration has an upper hand. At the other extreme, the situation in State Government institutions is still worse. When a doctor in a medical college in Uttar Pradesh applies for earned leave, his application goes to Lucknow where it is dealt with by the office of the Accountant General of the State! Two lecturers in a government college in Haryana were selected for the Teacher Fellowship programme of the University Grants Commission to work in a university. Alhough the State Government had released them on leave with full pay, their salaries were held back for some technical reasons, and were paid only after more than six months, causing great hardships to both the lecturers who were married and had families.

The aim of this article is not be denounce any particular group or to establish the superiority of the other. It is to bring out certain things into the open and generate some thinking in this direction in the highest circles. The main point to consider is whether we really gain (financially and academically) by following such stringent procedures, or we are being penny wise and pound foolish. The comparison with the West made here from time to time need not suggest an inclination towards it. I am a staunch Indian nationalist and would like to see the country attain great academic heights. The comparison is merely to show where we stand on the academic map of the world and why.

A.W. Joshi

THE INDIAN HISTORICAL REVIEW

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Book Reviews

Problems of Higher Education in India: An Approach to Structural Analysis and Reorganisation, by K. L. Joshi, Popular Prakashan Private Limited, Bombay, pp. 312 Rs. 18.

We live in a period of human history in which we are beset with "problems", and everyone is struggling with some problem or other. Many solutions to problems of various kinds are offered by scientists, sociologists, educationists and politicians. We have problems of pollution, population, energy, education, languages, peace, war, and many other things. There is no unanimity in the proposed solutions to these problems. Indeed, the multiplicity of voices heard in this connection is often confusing.

It was in America that the word "problem" first began to be heard in frequent use, and Americans speak of a "problem-solving approach" in all forms of study and research and to life itself. The word has become very popular in India also—so much so that if you ask someone whether something can be done, the answer might be, "Certainly: no problem!"

A problem, in its original sense, is something thrown or put forward in one's way; then it came to mean a question raised for enquiry or consideration or solution, or a proposition in Mathematics or Physics stating something that is to be done. But the word has been used in a wide variety of generalised senses and now usually means simply some kind of difficulty or perplexity or worry. What appears to be a problem to one may not be a problem to another. A problem may be capable of solution, and when the solution is found the problem ceases to exist. A problem may be a difficulty that cannot be overcome fully or permanently: such a problem is one with which we have to learn to live.

Among the many problems with which modern man everywhere is confronted is that of providing a society with a system of education that satisfactorily takes care of the varied needs of nurturing and training the young, transmitting and adding to knowledge, helping people to qualify for the many functions and activities of society, and to contribute to its growth and wellbeing. In a rapidly changing world the problem of adjusting and adapting and renewal of the educational arrangements of a country is a continual one—a problem that is never fully "solved". We want universal education, we want to ensure that all children in our society receive some education, and that the arrangements made for the education of the young enable them to overcome any handicaps of their home or class or heredity or environment. We want education to fit young persons for gainful employment and also enable them to participate fully in the culture of their society. We want education to be freely available and at the same time we want 'standards" to be high. We want opportunities for non-formal education to be available to everyone, and we want life-long education for all. All such demands find a place in the educational and political debate that goes on in India; and we have our own special problem—problems connected with the many languages that we have in the country, the view that the mother tongue is the best medium for education, the place of English, of Hindi, of Sanskrit; problems resulting from rapid expansion, and growth of population; problems of combating the high level of illiteracy and of providing education to the large number of adults who have had little or no formal education. We have also problems of quality and 'standards' and co-ordination.

Many essays and books have been written in recent years dealing with one or more of these manifold problems. From the beginning of modern university education in India in 1857, criticism of the institutions of education, of the "system", and the manner in which Indian students and teachers "used" the system, has been made by individuals and commissions. One of the anxieties of the early years following the creation of a modern system of higher education was that Indian students were inclined to think of education as a way of preparing for a test, and that the examinations, which the universities instituted in order to establish 'standards' to be aimed at by the students, were dominating the teaching and learning processes in the colleges. The Indian universities and colleges were affected from the beginning by the peculiar genius of India; though the "system" superficially was modelled on London University as it was when it was founded in 1836, very soon the Indian universities had little resemblance to British or European universities. Even the words used in regard to the administration of the institutions, such as senate and syndicate, suffered a sea-change when they reached India.

When Indian educationalists and sociologists look at the Indian educational scene, they inevitably take note of what is said in America or Britain about *their* universities and educational systems generally; and for ideological reasons or because of the accident of having visited some universites in Russia, some people commend Russian practices: in ***Problems of Higher Education in India.*** K.L. Joshi who has spent his whole life in education as Professor of English, Government official, Secretary of the University Grants Commission and finally as Vice-Chancellor of a new university, has sought to come to grips with the somewhat chaotic situation that now prevails in India in the whole area of post-secondary education. Though he mentions some of the special problems of higher education in India his main concern in this book is with "co-ordination". He proposes that all institutions that now provide one or another kind of training to students after the school-leaving examinations should be brought under a unified "system", and that the control and direction of such a system should be vested in a special ministry of higher education. He thinks that the UGC should cease to exist as a separate body. He suggests that "the Open University concept" should be used in a modified way in India, so that a large number of the young people who now flock to the colleges and are unable to complete their courses could acquire a "qualification" without joining a College, and at their own pace.

Joshi believes that his proposals are based on the "principles of systems analysis". But it is not clear what these principles are. "Systems analysis" is a term from military logistics or business management. The purpose of such analysis is to enhance the efficiency of the system. But unlike military or business systems the educational institutions of a large country cannot form a unified and simple system. Joshi leans very heavily on the utterances of American writers like Clark Kerr and Perkins: but though their views and utterance, are of value it must be remembered that they are commenting on a situation that is very different from ours in India. They do not have the many complicating factors that we have—multiplicity of languages, ambivalent attitudes to religion and spirituality, and conflicting ideas about what constitutes the ethos of India.

Not everyone will agree that a ministry of the Government of India could be relied upon to co-ordinate higher education in the country with impartially, skill and on a strictly rational basis. We have many examples of wasteful expenditure for purely sentimental or political reasons such as broadcasting news in Sanskrit, and spending crores of rupees in setting up a new university in Hyderabad when there are already three universities there. A political government, liable to frequent and radical changes of policy and principle, cannot be expected to maintain a system with reasonable steadiness of goals and purposes; and experience shows that direct administration by government is usually inefficient, wasteful and slow-moving.

Co-ordination in the sense of putting the many institutions of higher learning in the country into proper relation with one another is a desirable goal; and indeed the purpose of establishing a UGC was precisely this. But as Joshi rightly points out, all aspects of higher education are not under the purview and control of the UGC. The Government was never willing to part with its power and patronage; and the rivalry between various ministries has made co-ordination of technical and technological education, medical education, and agricultural education impossible in India. Even if a ministry of university or higher education (as in Russia) were created, centrifugal tendencies will still be at work. The conflict between regions and between the states and the Centre will continue. Perhaps the way to a partial solution of the problem of co-ordination in a limited sense of the word is to promote inter-institutional relations through a properly organised association of colleges and universities and other institutions of higher learning, vested with statutory responsibility and power.

While one may not agree with some of Joshi's conclusions and recommendations, he deserves our thanks for so clearly drawing attention to some of the organisational and structural weaknesses of higher education in India. One could have wished that he had not given so much attention and importance to what foreign writers have said about their own affairs and that he had made an attempt to probe the deeper aspects of education and the reasons for the low quality of teaching and scholarship in India. Expressions like "from autonomy to system" "multiversity" are misleading out of their context. Multiversity is not a term invented by Clark Kerr; it was used much earlier in England. The word 'university' is not the opposite of 'multiversity'. The medieval European *studium* or *studium generale* came to be called *universitas* much later. *Universitas* at first meant a gild; and when applied to the gild (or gilds) within the *studium* it was always particularised as *universitas magistrorum* or *universitas magistrorum et scholarium* (gild of teachers, or of teachers and students). The word had no reference either to 'unity' or 'universality'. Newman's idea of the university was not the original concept on which the European university was founded. Newman's was a post-renaissance view of the purpose of (higher) education and is the basis of the "leadership principle" of which so much was heard in America until not so long ago. The university in a changing world is naturally subjected to new pressures and demands. The high cost of education, the explosion of knowledge, the increasing relationship between the universities and the political and economic organisation of a country, affect the individuality and autonomy of the university. There is therefore need to integrate relationships both between the individual universities themselves, and between the universities and the other sectors of public activity. In America where universities and colleges have enjoyed "privacy" there is now the need to "systematize" relationships and functions. The problem is different in Britain where universities have never been "private" in the American sense. The changing situation in every country demands its own separate rethinking: it is useless to try to copy the practices of other countries even though we may take warning or encouragement from them.

It must always be borne in mind that education is concerned with *persons:* unlike a factory a university is not engaged in turning out "commodities". Systematization of the administration and organisation and structure of the universities may improve mobility and reduce wastage of resources: but the profounder aspects of the teacher-pupil relationships, and the creation of conditions of study and research where there are opportunities to explore the mystery of life and of the universe cannot be "co-ordinated" or "managed" by a bureaucratic "system". We may take the horses to the water but we cannot make them drink: when educational institutions fail to inspire the human spirit to high endeavour and the continual search for truth, the situation is very much like not being able to persuade the horses to drink. No amount of "improvement" of the trough in which the water is kept, or even analysis of the quality of the water that is provided, will do much good unless we also try to understand horses better. It is certainly important to look at the structure and organisation of our universities and other post-secondary institutions and to ensure that they are adequately financed and properly run and that there is no avoidable wastage of resources. But the great need in India today is the improvement of the character and behaviour of our students and teachers and the development of the inner life of our educational institutions.

But what Mr. Joshi set out to do he has done with thoroughness. He has brought to his work a great deal of study and erudition. *Problems of Higher Education* is a valuable addition to the growing literature on higher education in India. One could wish that Joshi had paid more attention to the literary quality of his writing and to his use of language. But notwithstanding some deficiences in this area, the book is worthy of the attention of all educational administrators in the country.

Samuel Mathai

The Out of School Youth by* V.E. Reddy and K.S. Bhat, Sterling Publishers Private Ltd., New Delhi, pp. 299.

A considerable expansion of education has taken place in India specially after Independence. Educational institutions have been established in the remotest parts of our country with a view to spread educational opportunities over the weaker sections of our society. Various channels of non-formal education have also been opened for drop-out children as well as the out of school youth. However, inspite of all such attempts education, specially professional and higher education is still confined to better-off section of our society. Those who are economically poor and culturally deprived are still neglected and deprived of educational opportunities. The out of school youth is the most affected section of our country because of their socio-economic conditions. Their proportion to the total youth population in India is higher than the proportion of student youth, but studies have merely dealt with the latter and neglected the former and their problems, such as, their educational deprivation, socio-economic problems, educational drop out, problem of their re-schooling, job opportunities open to them, etc. The present study is an attempt to identify some of these problems of the non-student youth.

The study is a survey and exploratory type of work. Its main objective is to explore socio-economic determinants of the life chances of out of school youth and examine their aspirations, motivations, attitudes, orientations, etc. In order to make the study more meaningful the problems of student youth have also been dealt with. The study focuses itself on those young people who fall under the age group 11 to 21. They form more than 22 per cent of the total population of India. The study is mainly concerned with urban male non-student youth.

The study was conducted in two similar cities—Delhi and Hyderabad and one dissimilar city—Vishakhapatnam known as Vizag. There are two phases of the study. During the first phase of the survey, a census type household questionaire was disigned to collect basic data and identify non-student youth based on cluster-cum-stratified sample in selected areas of the cities. The selection of areas was based on "Social area analysis" of the census population. In this connection, Shevky's method of social area analysis has also been adopted. During the second phase, depth interviews were done based on an elaborate open-ended questionnaire.

The methodology covering the sampling procedure takes into account three defining parameters for the selection of social areas. On the basis of these parameters: General Literacy Rate, Female Literacy Rate and Concentration of Scheduled Caste population, social ranking of areas into low, medium and high has been done. In Delhi, for example, 64 blocks or localities were selected and classified into various social areas depending on what score they obtained in terms of the parameters. The same procedure was followed for Hyderabad and Vizag. For the first phase investigation basic data were collected from 20,152 (11,088 non-student and 9,064 student youth) respondents of various regions of Delhi, Hyderabad and Vizag (p. 11). For the second phase, a multi stage stratified sampling procedure was adopted. In all 1,336 non-student male youth, 1,021 from Delhi urban (including *Jhuggis*) and Vizag urban, and 315 from Delhi rural and Vizag rural, and 169 male student youth were actually interviewed (p. 13). After the collection of huge amount of data, processing was done with the help of HONEYWELL 400 for the first phase data while the second phase data were processed with the help of IBM 1620 and 7044.

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*Although the text does not strictly pertain to higher education, no doubt the material is significant as far as higher education is concerned.

The major finding of the study is the close association between the incidence of non-student youth and their socio-economic conditions. The root cause of their educational deprivation is their cultural deprivation. The high proportion of drop out among them is a consequence of socio-economic and motivational factors. Their socio-economic problems lead to educational drop out which in turn reinforces the former because their occupational status, aspiration, attitudes and orientations are directly affected by the level of their educational achievement. Most of the non-student youth either have no education or dropped out at certain stage of schooling without reaching the secondary school or functional education but they reflect a positive attitude towards education specially vocational or technical. They are mostly engaged in unskilled work and seek employment through informal sources. They are confronted with an extreme sense of frustration and alienation because of their lower occupational and educational status.

However, these youth are frequently exposed to cinema which has positive impact on their educational aspiration. They do not read newspapers and magazines because of their motivational factor which is again affected by their economic, educational, environmental and family conditions. These conditioning factors are also responsible for differences in their attitudes towards religion, caste, language, etc. For example, those non-student youth who belong to low class areas are more conservative than the non-student youth of upper class areas, although the upper caste youth, reflect a negative attitude towards other groups as compared with lower caste youth. Thus, the study shows that the entire life orientation of these youth is governed by the socio-economic, environmental and socio-psychological factors. They are more alienated from the society than the student youth but they show their willingness to improve their socio-economic status.

Taking into account their problems and their life prospects, the study suggests certain remedial measures to established centres of integrated services like vocational guidance, recreational activities, short training programmes in vocational education, programmes for personal development and continuing education. The study as a whole is quite satisfactory. It is methodologically sound and systematic. The findings, although very common, have policy-making implications. They may be much useful if similar studies are conducted at a very large scale in India.

Ehsanul Haq

Ideological Orientation of Student Activism, by Jacob Aikara, Dastane Ramchandra and Co., Poona, 1977, pp. 153. Rs 37.

In a sample study of 576 graduate and post-graduate students of Trivandrum district, this doctoral dissertation, links up certain selective social attributes like caste, religious and economic backgrounds of students with the degrees of activism. But the author argues that in the state of Kerala student activism is primarily backed by ideology coupled with organization. As a matter of fact, student activism in this part of the country, the author writes, "is meaningful because of its ideological and organizational basis, making it distinctive and different from the usual run of activism". Thus neither the theory of disruptive volition of students nor the approach of deviant behaviour can fully explain the dynamics of their struggle and agitation.

According to Aikara, the economic

background of students does not have any direct relationship with activism. Much against the common view that students of upper income groups are less prone to activism, 77 per cent of the upper class students are found to be activists. This goes to show that the first students to protest against the existing system may not necessarily be those who suffer it most acutely. The data, however, reveals that student activism is slightly leaning towards students with a humble rural background. Furthermore Aikara finds Ezhavas to be the most involved in activism as against Brahmins or Nairs. Brahmin students, irrespective of their economic status, are the least activistic.

Independent of the socio-economic background of the students most students in Kerala are drawn towards radical ideologies. Although majority of the students in the sample belong to the student wing of the Congress party, yet Aikara observes, "Communism has taken deep roots in Kerala. Intellectual elites have provided leadership to radical movements espoused by some political parties. Students being young and intellectually more developed, are suited for leadership in such movements. It is not surprising, then, if we find radical leaders among the students of Kerala". But is the radicalism of the students the outcome of the extended hegemony of certain political parties in Kerala? Or is it intrinsic to the contradictions in the system of higher education and its pressures on the student community thereof? Aikara does not squarely pose this central question and fails to dig deeper into the factors responsible for the radical ideology of the student groups.

The book, however, sketches the mode of higher education in Kerala, where 75 per cent of the students attend private colleges. Most educational institutions that are supposed to impart secular knowledge are owned by private managements belonging to various communal organizations, such as Christians, Muslims, the Nair Service Society and Sree Narayan Trust, an organization of the Ezhavas. Some of these private colleges known for their rigid discipline, have managed to control the so-called student indiscipline. Thus "students who are least interested in activism come from the Christian colleges". At the same time however in most private colleges "strikes by teachers and by managements can be viewed as an incentive for student strikes in so far as they may feel in some way justified in their activism, or at least they can boldly retort to the authorities who blame them for their agitations". Not long ago there have been strikes by the private managements by closing down their colleges. One wishes to know more about the functioning of these private colleges.

The book is greatly burdened with the extensive use of quantitative data and lacks thorough investigations into the case histories of specific student agitations such as the "liberation movement" and the context of the demands. Aikara seems reluctant to apply the case study approach. How do individual student activists think? What are the compulsions behind individual agitations of the students? Why is a student activist oriented to a particular political ideology? Unless the study is able to provide the answers to these questions it will not be possible to judge if the emerging "radical leadership" is giving way to confirmism. Clearly a system of higher education that goes on claiming that the students should acquire degrees and do well in their examinations, even while there is a high rate of unemployment (it is estimated that now there are nine lakhs of unemployed and 17.8 lakhs of under-employed in Kerala) exerts contradictory demands on its student community. "Our angry young men" do not need a sophisticated police force. Aikara rightly points out that calling in the police worsens the situation in the agitated campuses. Perhaps there is need for a system of education that has fundamental relevance to the society as a whole and has meaning to its students. We need many more studies before any generalizations emerge. Nevertheless, with Aikara's sympathetic beginning the prospects seem favourable.

Bikram Nanda

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Decline or Transformation of the Universities ?

ALAIN TOURAINE

The Crisis in the Notion of Education

Today it is no longer permissible to talk of a crisis of the universities as if the tremendous expansion of higher education had only produced imbalances—serious enough, no doubt, but which could be overcome by new methods of organizing university studies. Nor can the view be held that for the last ten years or so the universities have suffered from the consequences of student movements: these movements rejected forms of culture or of social and political organization outside the university world, rather than the organization of the university itself. Now that peace reigns in general on the campuses and almost everywhere student movements seem to be profoundly weakened or disorganized, and at a time when the rapid increase in university enrolments has slowed down, we are better able to judge the gravity of a crisis which has more to do with the functioning of universities and schools than with their method of operation.

It is very difficult for us to call the notion of education in question; but we must see to what form of society it has been tied. The societies which have placed the greatest value on education are also those that have evolved as groups of institutions, each of which plays an important part in the survival of society as a whole. In the past, the life of societies seemed to be ruled by two complementary mechanisms: on the one hand, institutionalization, whose highest expression lay in the formulation and application of the laws, and, on the other hand, socialization, which aimed at inculcating in the citizens respect and love for the laws and institutions, that is to say for the rules of collective life. A magnificent vision, indeed, which was inherited

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Author's response to our request. Also published in *Prospects* Vol. X, No. 2, 1980.

from the *paideia* of the ancient Greeks, and which triumphed in classical Europe, to mention only the Western world. Education was thought of as a means by which man could gain mastery over the passions and also as the gateway into a spacious world governed by general principles and offering an escape from the constraints and traditions of a local community. The main idea behind classical education was to raise people, and more particularly children, up towards the universal by making them study the great works of universal culture, whether these works originated in their own country or region, or elsewhere. At a lower level, this notion implied the autonomy of the teaching profession, and particularly that of the staff of universities. We need only recall the great university reform movement that started in Cordoba and spread all over Latin America in the years immediately after 1918. The struggle for university autonomy was a social and political struggle against the traditional leaders, and at the same time it pointed to a highly scientistic or positivist conception of knowledge.

The notion of education suffered profoundly from the development of industrial society. The seventeenth and eighteenth centuries had produced a number of original ideas on education, but they became fewer as industrialization spread; so much so that very often the new and go-ahead world of producers was seen in opposition to the world of scholars and intellectuals, who belonged to the past. Technical education, which was often provided by firms, was seen in opposition to general education and there was an increasing tendency to think of life in contra-position to studies, as concrete reality versus abstraction, which was regarded, significantly, as an impoverished form of reality. This theme has continued to be developed, in the highly industrialized countries, bringing in its train a corollary to which more serious attention will have to be paid: the replacement of education by training, whose chief criterion of effectiveness is its ability to meet the needs of the labour market. The university and educational institutions in general were identified, in the first place, with the establishment; subsequently and more concretely, with mechanisms for inculcating the signs and determinants of social inequality. Educational institutions were denounced as bourgeois, capitalist and also Western-centred or colonialist. The universal values they held were attacked as representing above all the ideology of dominant countries and classes. It was an extraordinary turning of the tables. A century ago, everyone was perfectly aware of the inequality of access to the various levels of education; but what seemed most important was the egalitarian and integrational function of educational institutions as such. The industrial era destroyed this confidence, and left only inequality visible.

This development is no new one. We must remember that at the end of the nineteenth century Emile Durkheim, one of the founders of modern sociology, pondering over the possible means of restoring some degree of social integration in societies disrupted by industrialization, concluded that education could no longer fulfil[3] that function, which would have to be entrusted to workers, associations, or, as we should say nowadays, trade unions. For society could no longer said to be based on certain principles or to possess a particular nature. The Western form of industrialization produced a society torn by social conflicts, and the function of social integration could no longer be defined otherwise than as a process of overcoming and institutionalizing such conflicts formed in the production process.

Decline of the Universities

This general crisis of educational institutions is most striking at the university level. Higher education and scientific research are everywhere progressing, but people are increasingly doubtful whether universities can survive—at least in their strict definition as institutions in which the production, dissemination and application of knowledge are associated. It would be nonsense to talk of a crisis or decline of higher education; but one may reasonably suggest that it may well be organized in a non-university way, that is to say that the functions of the production, dissemination and application of knowledge are likely to become separated and to be undertaken by different institutions. This seems particularly clear in the context of research. Whether it is carried out principally in research bodies, as is the case in the USSR and France, or whether it still remains in principle largely associated with the universities, as in the United States and the United Kingdom, the development of research is taking place to a great extent outside the universities. It is financed from state funds; much of it is subject to the law of secrecy; and it is so demanding and often so highly specialized that research and teaching are growing further and further apart. Even when the ideology of members of the teaching staff prompts them to assert the need for maintaining close relations between teaching and research, such relations quickly begin to disintegrate. France is one of the most striking examples today of the almost complete separation of the two.

On the other hand, the function of the application of knowledge has developed very rapidly in societies in which technology and science play an increasingly direct part in production. Thus higher education institutions have been established offering a short course, in which the emphasis is placed on technological rather than scientific knowledge and the aim is to provide instruction as directly as possible in professional work, so leading to specific jobs. The distinction between the universities and these technological or polytechnic institutions is especially clear in the Federal Republic of Germany and the United Kingdom. In France such institutions are apparently of little importance, but B. Girod de l'Ain recently showed that they awarded about one-third of all the diplomas gained, which places them in this country almost on a par with the universities. Then again, the function of disseminating knowledge has been extended and diversified to such an extent that the traditional definition of a student is no longer appropriate. In some countries and in some disciplines (in Italy in the case of the social sciences, for example) the majority of students are persons who have already been in paid employment and who, thanks to adult training systems, can take retraining courses or simply undertake further study—which has the added effect of reducing both the effects and the visible magnitude of unemployment. This being so, it is difficult to see how the same institution can carry out the tasks of research, teaching and professional training. Everywhere functional differentiation is on the increase *pari passu* with the expansion of higher education. In some countries it takes the form of the separation of functions. Such is the case, in particular, where research and teaching are conducted separately. In other countries it operates through the hierarchical ranking of establishments, the importance attached to research being the sign of a higher status and concentration on direct professional training indicating a lower one.

This disintegration of the classic university model which developed in Germany in the nineteenth century and spread more or less rapidly and completely to a large number of countries can be pushed to an extreme. In that case, the universities no longer fulfil educational functions, which are taken over by the mass media, relayed by peer groups which may also be ideological, political or social organizations of various types. Some have gone so far as to suggest that this disintegration might even cause the status of teacher and that of student to disappear altogether. It is not beyond imagination that all those who are or who will be part of the working population should, on completing their compulsory schooling, be presented with a number of shares corresponding to years of study; they could either use these immediately or else, if they start by taking up a job, 'invest' them and use them with the interest accumulated, that is to say by having more time for study at their disposal, time that is paid for by the community. As for teachers, in many subjects of study they form less and less a separate category, especially inasmuch as research takes place outside the universities and the big firms prefer to control training systems and professional training syllabuses themselves. Why then should not qualified persons be expected to devote part of their working life to teaching? It is even conceivable that intellectual work which is not part of a professional training course could be continued solely in research institutes or in conservatories and museums.

The Professionalization of Teaching

In point of fact, such extreme solutions are rarely advocated. The big firms themselves, because they prefer to supervise the training of members of their staff, want the universities to provide their future employees with general knowledge so that they themselves remain in direct control of what is most closely connected with their own particular operational system. From the point of view of research, it seems dangerous to separate teaching and research completely, for that may mean that only students and research workers trained in a totally different spirit are available for research purposes. Besides, it is easy to see the limitations of teaching that is altogether cut off both from professional training. Such mass amateurishness might well be merely a way of manipulating the unemployed and, therefore, a more forceful method of bringing about professional, economic and social changes by avoiding all active participation on the part of those concerned and reducing them, temporarily and prematurely, to the position of retired persons. That is why most observers have tried to re-create the university by re-establishing some of the links between teaching, research and professional training. In the vast majority of cases, their main idea has been to reduce the gap between university life and professional activity as far as possible. The predominant belief nowadays is undoubtedly a belief in the professionalization of the universities. Such professionalization is not a mere matter of professional training, for the nature of our economic and administrative activities is such that they have an increasingly direct need of knowledge of a general nature. The advocates of professionalization have no difficulty in proving that a general scientific training is indispensable for professional studies at a time when technological processes become quickly obsolete and when a member of the administrative staff or a technician is expected to be capable of adapting himself to changes rather than merely to have mastered a skill or a body of knowledge that does not change. Indeed, in circles close to the big firms people often talk favourably of the social sciences, inasmuch as the big firms are aware that their efficiency depends to a great extent on their ability to run complex communications systems, to introduce innovations and to adapt themselves to change.

This view of professionalization, however, is imcomplete or unrealistic. Two points, at least, need to be added. In the first place, the adaptation of training to employment also means the adaptation of the university system to the organization and social hierarchization of big firms or administrations. In fact, professionalization is inseparable from explicit hierarchization. To be more precise, it is astonishing to see what a very different view is taken in practice by those who talk of professionalization, as soon as it comes to the highest levels of recruitment. The future leaders (in more general terms the 'elite') are always chosen by testing their ability to carry out abstract exercises, usually of a mathematical type. Sometimes also—and this is still more in line with traditional ideas—the choice is made on the basis of the candidates' ability to verbalize experience with ease and to deal with unexpected situations, in other words to behave like leaders and, to a certain extent at least, to show that their origin and inclinations conform with the interests and values of the world of leadership. In this way professionalization, which at first sight seems to be a means of giving the univerisity new life, is probably the surest way of hastening its demise.

Is there Another Model?

Can we suggest another model of university life and activity, and avoid choosing between an elitist humanism and a technico-bureaucratic professionalization, or must we accept the latter, placing all our hopes on unorthodox, non-institutionalized centres, which could however be officially recognized and guaranteed, where a general training would be provided and critical discussions take place? Here the choices are of a political nature.

To reduce university life to a hierarchical form of training for the work done in technico-bureaucratic structures is highly dangerous in societies in which such structures have considerable power, yet are essentially separate from the state; and the dangers of such a form of university life become immense and completely unacceptable when the directing economic structures are at the same time identified with the power of the state; it is clearly out of the question that university life should only be able to survive clandestinely.

But over and beyond these reactions of a political or ideological nature, on what arguments can we base the need for safeguarding and re-establishing the existence and idependence of the universities? Primarily, on the nature of the most advanced industrialized societies. Such societies are able to control not only their means and forms of the organization of production, but also the establishment of their objectives, as is clear both from the development of planning and also—and in a deeper sense—from the ability of large organizations to produce information, a type of health service, a type of consumption and hence of daily life, a type of architecture and town planning, and so on. In industrial and pre-industrial societies scientific knowledge could be regarded as above society, belonging to the sphere of ideas and principles. In our day knowledge has become essentially a social factor. Today a society cannot be defined as being the sum of the consequences of a state of technical development. On the contrary, we now know that societies make different technological and perhaps even scientific choices in accordance with their values, their forms of social organization and their political system. It is certainly not true that the use of nuclear energy produces a technocratic society, on the contrary, we may ask ourselves whether it is not characteristic of a highly technocratic society to develop reliance on sources of energy that require great concentration of information and of the decision-making capacity. This critical analysis of the social application of knowledge obviously concerns the whole of society; it is none the less true that it is in the best interests of the producers and transmitters of knowledge and of those engaged in acquiring it to ponder over their own particular role and over the significance and social application of their work. This is the principle on which the defence of the universities can be based: they must be centres for the critical analysis of the production, transmission and application of knowledge. This principle is manifested, first, in a particular conception of education, and secondly, in a particular pattern of university organization.

At the level of education as such, the idea of general culture must be unequivocally defended, by reviving it, to start with. However, general culture cannot of course be defined today as in the past. Nowadays we do not pay reverence to works of universal significance; rather, we want to obtain the means (one of which is a knowledge of the great works of the past) of analysing the interrelations between knowledge and the various aspects of society and of culture. General culture cannot be defined otherwise than as the understanding of the action of society upon itself through knowledge. Society today is constantly discussing the economic and social consequences of biology; during the past thirty years it has carried on a lively controversy on the problems raised by the use of nuclear engergy; historical, economic and sociological interpretations originating in the different regions of the world meet in it; yet, paradoxically, this lively general culture has impinged very little upon university institutions. Some of those who uphold professionalization but who, in fact, refuse to give it a technico-bureaucratic connotation are actually very close to sharing the ideas expressed here.

Turning to the ostensibly more concrete level of university organization, we must make it clear that it should not be based on the separation of disciplines (physics, geology, economics, history, etc.) and still less on fields of application (industry, army, education, public administration) but should take for its basic unit a field in which society acts upon itself—town planning, communication, production, health, etc.—so that the knowledge to be used, the ways of transmitting it and their forms of social, political and economic application will never be separated. We have long known that an economic change making it possible to pipe drinking water to a village affects the health of the inhabitants asmuch as the use of medicaments, or more. It would, of course, be wrong to see health policy in opposition to medical and scientific research. The followers of Pasteur have demonstrated in a sepectacular way how basic discoveries make the development of public health possible. There is no question, therefore, of contrasting one concept with another or one mode of operation with another; our aim is much simple—to be capable of analysing the practices of society, especially in so far as these practices are dependent on scientific and technical knowledge. In this sense, which is not exactly the traditional sense, one may legitimately set a critical university in opposition to a professional university, but it would be extremely dangerous to set an ideological university in opposition to a technological university, for both concepts should be equally rejected. It is therefore essential that three ways of organizing university life should be distinguished and at the same time related to each other, for it is clear that each of these three functions must preserve a certain autonomy: first, the institution, the place where knowledge is produced; secondly, the faculty (to use the old word for describing a teaching unit); and thirdly, the educational institution that provides professional training. The essential point here is that all students should be able to participate in these three types of activities by studying curricula that are determined by a particular area of social practice.

All this presupposes that university institutions have considerable autonomy; they must be capable of working out for themselves the best means of combining these three basic forms of organization.

There is one point which deserves special attention. Universities have been established within the framework of national states and very often for the purpose of reinforcing the national consciousness. A professionalizing view of the university necessarily means that university life is increasingly confined within the national context, since the employment categories and operational economic norms differ from country to country. On the other hand, the renaissance of general culture necessarily calls for a dynamic internationalization movement on the part of the universities. Critical analyses of the determinants of methods of production, transmission and application of knowledge and experimentation of them call for international comparisons. How is a certain type of disease dealt with in different countries? How are capital investment decisions taken in them? What view do they take of their past? How do they deal with delinquency? It is surely indispensable that all students should have real experience of societies other than their own, for a considerable time, if possible, either through carrying out part of their studies abroad or through participating in the life of other societies for a time. It is particularly desirable that the bulk of these exchanges should take place between the major regions of the world—the East, the West and the South. One of the most important changes that should certainly take place in education is that students should gain an understanding of the thinking of other socieites, and it is to be hoped that the international organizations, and the United Nations University in particular, will play an active pioneer role in this matter.

It is difficult to foresee what the chances are for a renaissance of the universities; but their present decline must not be concealed. It is possible that the decrease in student movements is one of the main signs of the decline of the universities themselves. It may be that in many countries, this decline is already irreversible and intellectual production already takes place by and large outside the universities. But just because the forces making for the disintegration of the universities are extremely powerful, it is essential at least to express the conviction, as directly as possible, that the existence of universities is necessary, and that we must learn how to combine afresh, in a mass education system at the higher level, the production, transmission and application of knowledge.

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Academy of Sciences, USSR—Structure and Function

LEELA INAMDAR

After realizing that Academy of Sciences, in the Soviet Union can influence the policy making process,* it is interesting to study its structure and function. The present paper therefore aims at tracing the relevant changes in the structure of Academy, brought about by the changes in the constitution of the Academy from 1917 onwards and to show how the individual institution, or faculty is benefited by these changes. It will also prove how the certain co-ordination in the research in all the faculties is maintained even though the institutes and faculties are more or less autonomous, and function fully independently.

Structural Development

Academy of Sciences, USSR is the greatest scientific establishment in the USSR, primarily engaged in research work. An American historian of the Academy has recently stated—"Of all the scientific institutions in various countries of the world, the one which is by far the most important, relative to scientific life of nation is the Academy of Sciences, USSR". The progress of science in the USSR, is mostly dependent on the progress done by the Academy. It is the only research organization of its own kind and deserves that honour by legal right. In the very first project of the Academy in 1724, it has been made clear that, "for the fruition of sciences, usually there are two types of establishments, University and Academy or the association of the sciences.

The distinction between the two-academy and university—is made clear in the article Two. It states, "University is a collective of scholars, who teach

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*Reference to my paper on Academy of Sciences, USSR and education in the Soviet Union—*The Radical Humanist.*

young people, while in the Academy, the scholars are engaged, primarily in research work"[2].

After February Revolution: That is why the Academy holds unique place in the intellectual life of the Soviet Union, even though there are grand old universities like Moscow and Leningrad. This unique nature was made doubly sure when after the February revolution, the temporary government which came in power decided to change the constitution of the Imperial Academy on more or less democratic lines, and giving Academy status of autonomous body. Though this government was in power for only a brief period of eight months, Academy managed to appoint the commission under the chairmanship of A.P. Karpinski* to study the certain statutes with that purpose in mind. All the members of this commission were the scholars of repute. In the very first meeting of the commission on the 16th of March, 1917, the problem of democratizing the organization of the Academy was discussed. The members were bent on achieving more or less an autonomous status for the Academy.

Though the great Soviet Encyclopedia simply mentions that for the first time in its history, the Academy was given a right to elect its own president.[3] It was more than that. In the introduction to the recently published constitution of the Academy, one of the editors explains the changes in the statutes of the Academy. He states: "The most important thing is the nomination of president and vice-presidents is rejected and the scholars themselves were given right to choose the president and the vice-presidents. Instead of approaching the government on the matters of elections, expeditions and other academic activities, the decisions were left to Academy itself". But this is not all. On the other hand the commission had made innumerate situations possible by which the power of president himself became limited in the work of Academy. For example, if before 1917, the president alone had a power to decide to call for an extra-ordinary meeting, now it has to be arranged on the demand of scholars themselves; any member with the backing of not less than ten together can put the proposal in written and get the meeting arranged on the subject he wants to discuss. The commission also recommended to omit the statutes in the constitution by which president was given the whole power to decide which works to be published, and, suggested that the faculties should do that. The faculties now were given freedom to choose their research scholars and acting members"[4].

On the 24th of March of 1917 the project of the new constitution was discussed in the general body of the Academy and all the changes were unanimously accepted. These changes were approved by the acting government and the consent was given on the 9th of May, 1917[5]. The statutes 36, 40-44, 84, 92-94 were now changed accordingly. The statute 36 is about the electons, 40-44 about the powers of the president and 92-94 about the calling of an extra-ordinary meeting (Constitution of the Academy 1836).

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*The same A.P. Karpinski was the President of the Academy from March 1917 to 1936.

Constitution after the October Revolution: "The first question Academy of Sciences faced after the October Revolution of the Bolsheviks is of making sure that its new legal position is not affected"[6], in any way. It seems that Academy forgo none of its rights in the tumult and managed to retain all its rights of autonomy. The position it holds from 1927, is different from the one, which it held upto 1917. Now it is not only directly linked with the Parliament—Soviet of the Peoples of the USSR, but for the first time, it has come out of its reserve and has to unite all the scientific institutions in the USSR"[7] and guide them.

In the beginning Academy was acting on its old constitution of 1836, (including the new changes in May 1917) but its changed position demanded new constitution. A new commission was appointed in 1919 by the Academy itself. It completed the new draft of constitution in 1923. Approved by the general body of the Academy, it was sent to the parliament of the USSR, for its consideration. It, in its turn, appointed another commission to go through it.

The basic change which took place in the constitution was pointed out by the above mentioned editor himself by stating following few facts. The Academy, as a necessity, has been given rights to open new institutions, arrange seminars and meetings of the members of the various republic academic institutions and the faculties to bring about the co-ordination in the research work carried out by them.

As regarding the finances of the Academy, it has independent estimate and has a right to rise its own credit. It is treated as an independent organization before the law.

But the basic change which took place in the constitution is detected by the facts that elections of the president, vice-presidents and acting members follow the absolute democratic method and the usual procedure necessary to that is followed. The members are to be elected by the absolute majority of two-third of the total members of the presidium.

Not the president or vice-president, but the presidium is now become responsible for the administration. To quote the same editor again, "By the constitution of 1927, earlier principle of one man's rule was substituted by the board-rule. The collective was now guiding the work"[8] and one more board in the form of secretariat is added to its help in the administration and financing of the whole organization.

The changes in 1930 *and* 1935: The changes in 1930 and 1935 predict in miniature what type of constitution was planned for the future. Both these tend towards democratizing the work of Academy and decentralization of the power of the Academy by steps: for example if the projects of 1930 and 1935 accept that president should finalize the publications, the project of 1957, allows the director of the institute, this discretion with the approval of the board of editors, elected for this purpose.

The statutes 27 to 30 in the draft of 1935 constitution are the beginning of increase in powers of the faculties. The question of their full freedom was discussed in 1950. The draft of 1959 has made them fully responsible for guiding the research work in the subjects coming under their jurisdiction. The draft of the constitution of 1935 gives the director of the institute a status of "one man—management" and the same trend of treating institution an independent unit continues in 1959 draft and further.

The 1959 *constitution*: The major change in the constitution of the Academy can be detected after the World War II. Though the discussion about changing the constitution of the Academy went on nearly for three years 1947-1950, the actual commission was appointed to project the new constitution in 1956. The constitution was to achieve the following purposes :

(1) To decide the rights and duties of the Academy in co-ordination and proper planning of the research work of the scientific institutions.
(2) To increase the powers of the faculties and the institutions.
(3) To increase in the high proportion, the powers of the directors of the institutes, so as to make them perform some of the functions of the institutes and faculties.
(4) To decide the powers and rights of the academic members, corresponding members and others.
(5) To simplify the structure of academic institutions and their organization.
(6) To increase the international connections, and the powers of the foreign members of the Academy.

The new project was discussed on the 28th of March, 1959. There is no reference that it was sent for the approval of the government. The new clause which is added to the constitution perhaps would make it clear why the approval was not sought for. The clause about the method of changing the constitution states that the change in the constitution would be brought out with the consent of not less than two third members of the general body. This clause appears in the constitution of 1959 for the first time and is not included in any draft before. One question is likely to be raised here, if the Academy can afford to do so when 90% of its expenses are borne by the government and when the government holds the purse strings. The clause 14 of the draft might provide answer to this question; it states, 'the estimate of the Academy is included in the National Budget of the USSR'.

The total change has been brought about in the matter of publications. The 1917 commission mentions the freedom of the departments or faculties in this respect. The faculties are no more obliged to send their publications to the president of the Academy, for his signature. There is no reference to this freedom in 1930 or even in 1935. Both the drafts 1930, 1935 accept the censorship. "The works published by the Academy and signed by the president could only go uncensored, by the alteration done in 1937"[9]. The Academy has a right to send all its publications without the censorship to other countries[10], states the constitution of 1959.

New project of 1959 refuses to mention any censorship it asserts emphatically that, "Academy has right to exchange its publications with the scientific institutions and organizations in the republic as well as organizations abroad"[11].

The Principle of decentralization of power was adopted in this project to the full. If the 1927, constitution bestows the powers on the general body of the assembly, this project divides that power among the faculties and the institutions. "Faculties it considers are the centres of sciences, and scientific organizations united together, as the Academy"[12]. The Institutes, it considers, are the elementary organs of the activities of the Academy[18]. The idea was earlier expressed in the project of 1935 and the director's was the one man management for the institution.

That is why now the procedure of the election of the director of the institute is changed. The general body of the faculty now elects the director and the general assembly of the Academy only gives its consent[14]. "The procedure is criticised by some of the members, on the ground, that much of the power of the Academy of Sciences is thus lost to the faculties"[15]. The Faculties now try "for the freedom from less actual questions and to organize the research on the problems that are basic in that particular branch of science[16].

The idea had not been groundless, since the number of the institutions under the Academy had gone up considerably; whereas in 1935, there were 31 institutes and 38 laboratories and commissions under Academy, in 1957, the number of them increased upto 143 institutions. This was decidedly the necessary measure for better organization of these institutes.

Till 1935, the faculties did not exert their freedom of choosing their own members or sending their publications out without the consent of the president, even if they were legally entitled to do so. The commission of March 1917 recommended to drop the statutes which gave president a right to direct the works to be published. Thus the censorship of the president was not a legal binding. By the project of 1959, the institutes and faculties are given full freedom in this matter.

In the 60*s*: In 1961, the presidium of the Academy decided to take some steps to achieve co-ordination in the scientific research which was conducted in the whole country—especially the research in natural and social sciences. The question of specification of faculties was to be carefully considered and their role in guiding the research was to be minutely studied. "The need for centralization of leadership in some of the important branches of research in the natural and social sciences was acutely felt". It was therefore decided that the scientific power and resources will be concentrated to resolve actual problems in these fields. The measures were therefore taken in this direction in the new revised draft (1963).

This draft of constitution was corrected five times in the period of seven years (1963-70) and the changes made were with the purpose of giving Academy a perfect organizational structure and are related to the unification of the disciplines of the same type, co-ordinating the work of academies in all the republics and the Academy of Sciences, USSR, correcting the method of electing the presidium or the buro—the administrative organ of the faculty,—etc.

The constitution of 1963 is thus a final draft of the constitution of the Academy of Sciences, USSR.

"The study of these documents" the editor of the Statutes of the Academy of Sciences, USSR (1724-1974) remarks, 'not only points out the change in structure, and the activities of the Academy, but also its position in the national organization and its place in the upliftment of traditional science"[17].

Academy as an Establishment

"Academy" is, as it is already observed, an institution of its own kind. It's unique nature helps it to perform an important role, not only in the field of knowledge but also in the field of national development and progress.

Like the Central Committeee of the Communist Party Academy presidium is also a select group. It is chosen from the various disciplines of knowledge, on the criteria of scholarship and nothing else. The strict democratic procedure of elections is followed and while faculties can recommend their candidates, they are to be elected by the two third of majority of the members of the presidium. Party member too is subjected to the same procedure—no more, no less.

In the 60s the number of scientific workers employed in the Academy of Sciences show the definite increase in the party members. Here the party may have some force. But the elected-working as well as corresponding—members of the faculties and the Academy, are accepted or rejected—i.e. membership given and cancelled—on their own merit and scholarship. In 1969, there were only 231 full working members, 414 corresponding members and 65 foreign members of the academy. The average age of the members of the Academy is usually above 40. These members are usually top scientists and are elected because of their contribution to science. This shows that they are of mature age and their career shows that they are above the temptations, of power or honour wholly devoted to the upliftment of sciences. This points out that this is also a select group having only social ambition like the central committee of the party. Brought up in the Marxist tradition, the scholars are aware of its limitations. They—most of them—are theorists and not strategists, but realists and know it very well that, they belong to the tradition where theory and practice are treated as two sides of one whole. That is why they whole-heartedly accept Marxist thesis about knowledge.

Function

Methodology of Research: Materialistic philosophy of Marx recognizes idea as reflection of the real world around us. Therefore, it has the basis wherein man can interact with the world outside. In the process of interaction, he forms concepts, compares and verifies them in his daily experience improves them as his experience accumulates and objectivises them as similar experience of persons other than himself either confirms, modifies or denies the given experience. Such a process is impossible, if the primacy of idea over matter is accepted.

Marxist philosophy denies absolute truths, truths unchanging and eternal; so the relative truths are the only truths that remain to work upon. It is for them a search for more correct approximations arrived at by verification through social practice which eventually becomes the scientific methodology of cognition. Thus the Marxist scholars put more emphasis on concrete historical method of research of the facts and events rather than the facts themselves. Academy fully and whole-heartedly follows Marx in this respect.

All over the world the basic concept of objective truth has been challenged today—"The old scientific ideal of episteme of certain demonstrable knowledge has proved to be an ideal". In his book Arther Koestler states, "The demand for scientific objectivity makes it inevitable that every scientific statement must remain tentative for ever——. Only in our subjective experience of conviction, in our subjective faith, we can be absolutely certain".

Soviet scholars too are convinced of the truth that objective novelty comes into being only when subjective originality operates on the highest level of hierarchy of existing knowledge. That is why the Academy gives full freedom to its members to voice their convictions in seminars and meetings, to propogate them among the professionals in ways and means available to them and is trying to make available, more ways and means to do so. Members are chosen strictly on the basis of their scholarship. They are elected by the absolute majority of the two third of the total members of the presidium and their work is valued on the same criteria—their contribution to science. This encourages the scholars to voice their convictions without any fear of losing their membership. But this right should be used discretely. In the totalitarian state criticism is the weapon to be used sparingly, indirectly. The administration now is entrusted to the board or collective of members and there is no autocratic rule of the president. Every member can share the administration by demanding the extra-ordinary meeting with only nine other members to sign the written request. When Smirnov M.I. cryptically mentions that K.K. Platonov—a well-known psychologist and psychiatrist—played important role in the symposium organized by the sector of philosophical problems of psychology on the problems of personality in the Institute of Philosophy[18] he perhaps means that it is he (Dr. K.K. Platonov) who started the discussion of the forbidden topic of personality development in the Institute of Philosophy in the sixties.

Even the idea would look absurd to the well trained Sovietologist. But they have a fixed complex that Soviet intelligentsia is pressurized and harassed to such an extent that it would bow down to every whim of the party and the government. True, the Academy is directly under the control of Soviet of peoples but there is every likelihood of escape because firstly it has its independent estimate of expense, and the party and the Government have to explain the cut, if there is any, to the people. Academy, as well as the party holds, important position in the eyes of people, because of it's historical tradition. Soviet Intelligentsia is much more united and powerful force than the Russian intelligentsia in the beginning of this century; and due to the spread of general and technical education in the masses, their academic level is much more higher than before. New generations find more affinity towards academy scholars who have nothing to gain (in fact, have to undergo mental strain) than the party politicians who have to lose the important thing which they have—i.e. power. So the masses do play though not en-masse, important role in their scheme of things.

One more thing is the temporary government had made some permanent settlement for the Academy; though it counts to almost nothing considering the expenses of the Academy at present and devaluation of money, it helps Academy to carry out certain research schemes without bothering to worry about the displeasure of the party and the government. The historian of the constitution of the Academy states in the introduction of the constitution published in 1974. "Instead of approaching the government on the matters of elections, expeditions and other academic activities, the decisions were left to the Academy itself." This fact would explain how the research on cybernetics went on from late forties to late fifties even though party was deadly against it on the ideological grounds.

This diversion is just to prove that the Academy scholars do enjoy limited freedom of expression and the question is only of using it to propogate their own convictions. The scholar who propogates a new theory may be a torch-bearer to the professional colleagues, enlightens them with his theory, convinces them of its correctness, encourages them to fight with him or back him in his cause. They in turn, make him improve his theory. The small spark of knowledge thus becomes a fire. In the spirit of true democratic centralization, once the theory is spread far and wide, it is absorbed in the basics of that particular discipline after its discussion in the presidium. Knowledge thus does not filterize from the top, but surges to the top from below by its own force. The professional groups thus play very important role. It is these groups which convince the Academy and force the party politicians to act upon their group convictions. The need of changing the method of character education might have been voiced by the psychologists and philosophers, but the little change—less emphasis on the theory of reflection, mellowing of extreme Pavlovism—is brought about by the demands of professional groups of psychologists, sociologists, pedagogues and the field-workers.

Now to explain the matter fully let us take example of the study of personality development in the Institute of Philosophy. In the 1960s, when the question was put before the Institute there might be few people who were reluctant to take up the subject, opposed it, but might have lost the ground when the voting had been done. This voting is done by the strict ballot system and there might be a few who dared not voice these views but just backed the view point by voting for it and no one being wise about it. But the fact remains that majority of them felt that this study is needed and that is important.

When the new theory is put forward in the form of doctoral thesis, the same procedure is adopted. Now the board of examiners selected for the evaluation of thesis, is strictly of the members from the same faculty, so it is quite possible that the progressive scientific attitude would be adopted instead of purely ideological and political consideration.

Institutes thus are free to and are responsible for guiding the research work coming under their jurisdiction and for the administration and organization in their own field. This responsibility is as if crystalized in the director—as institute is considered a unit of the federation and one-man-management is the rule to be followed. He is completely free as his appointment is done by the faculty and not by the Academy presidium. It is difficult to convince academicians who are used to clear cut theories like $H_2 + O = H_2O$ of likelihood of relative importance of all the causes in the development of national culture. His authority is only limited by his own colleagues—for example, board of academicians in his institute would decide which works are to be published. He may be able to suggest them but can't pressurize them. Unless they are convinced they would not accept his suggestion at all. If one of his colleagues with the backing of nine other demands extra ordinary meeting, he has to organize it. Thus the director of the institute is at once responsible to his colleagues in his discipline and the faculty members. Faculty members are in turn responsible for his decisions to the Academy presidium. Thus the functional unity is maintained though structurally each one—institute, faculty—is free. Like human organism they all maintain their autonomy but are integrally related to the one whole that is Academy.

This integral unity is kept on many levels. Institute keeps close contacts with the institutes of the same subject in other republics, with the academic institutions of the same discipline in other socialist countries and also with the scholars in other countries. In the interview given to the "Soviet Land" by the Director of the Institute of Oriental Studies of the USSR—Academy of Sciences, he explains how this co-ordination is achieved in the wide range of research centres all over USSR. He says, "We have Soviet association of Orientalists. It is known as the National Association of Orientalists and brings together Orientalists from all over the country, regardless of where they work. Besides there is a co-ordinating council for Oriental research—a leading division of the Institute of Oriental Studies of the USSR—Academy of Sciences. He later asserts that the activities in other institutes or republics are in no way hampered by their institute. "Our only concern in this respect is to lay down guidelines for the advance of our science, and to avoid unnecessary duplication". They co-operate with the institutes of other disciplines too. The Institute of Oriental Studies of USSR for example brings out two journals (monthlies) 'Peoples of Asia and Africa' and 'Asia and Africa today' together with the Institute of African Studies. Much work is done on language learning in the Institute of Psychology.

Thus the whole structure of the Academy of Sciences is made flexible enough to adopt to the changes effectively. The principle of democratic centralization is effectively applied here so that discipline and creative efforts both are achieved. As a collective Academy exerts necessary control and at the same time it has given full freedom of activity to all its members, institutes and faculties. The result is maximum efforts are being done by the individual units in the limits given by the Academy. That yields maximum results, and the science and the society both are changing because of it. The change is definitely to the betterment of the humanity because philosophy of Marx is basically so.

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Industry-University Interaction

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The need for industry-university interaction for mutual benefit of both is being increasingly appreciated by all sections of the community — teachers, academic and applied research scientists and managers of industries. In a recent editorial published in the journal *ENDEAVOUR* this need is emphasised in effective terms even for more advanced countries:

> To the metaphysical poet John Donne we owe the aphorism: 'No man is an *Island*, entire of itself'. The same may well be said of research and development: no industrial concern can be self-sufficient; all must retain strong lines of communication with the scientific world at large. This is true not only of small firms with very modest facilities, but of the largest international corporations where research and development staff may number thousands and annual budgets run into tens of millions of pounds. Such large departments suffice to undertake major new projects within the company's general sphere of interest; to make improvements in existing processes; and to embark on a limited amount of exploratory research that may eventually lead to profitable innovations. But the field of science and technology as a whole is now so enormous, and so diverse, that no company can maintain within itself the resources necessary effectively to enter any new fields that may seem attractive and appropriate. Nor, indeed, would it be sensible to try to do so; the cost would be prohibitive in terms of salaries and equipment that provide no immediate tangible return and may never do so. Generally speaking, companies must be self-sufficient in respect of their existing activities; have a reserve of knowledge and experience to extend their business frontiers systematically; and support an organisation that will permit them not only to sense new spheres of opportunity at an early stage but to develop them quickly[1].

In an even more recent (January 25, 1980) article entitled RESEARCH, INNOVATION, AND UNIVERSITY-INDUSTRY LINKAGES', Prager AND Omenn[2] have 'examined the status of, and potential for, university-industry research consortia and research partnerships and current and prospective roles of the federal government in stimulating such relationships.'

As regards the Universities of developing countries, in addition to the two roles of dissemination and creation of knowledge (which were conventionally regarded as the main responsibilities of the Universities), a new expectation of significant contribution to the development of the region (nation) has been gradually added in recent years. During the world war II, in particular, the departments of the Universities did make notable contributions to the overall national efforts. Thus the role of the Universities in the solution of immediate national problems apart from teaching and research in fundamental and applied fields came to the forefront in a much more accentuated form than even before. It is worth while mentioning that the University Grants Commission in India in its policy framework document (*Development of Higher Education in India*) for the next plan period has emphasized the "Extension' role of the educational institutions, which includes an active programme of co-operation amongst universities, research laboratories and the industry.

It is well known that the time-lag between a discovery in the laboratory and its application in industry has been decreasing fastly during recent years and the border-line between fundamental and applied streams of research is also disappearing. With closer university-industry cooperation, this gap can be shortened even further and the benefits of the latest advances in scientific knowledge and innovation can be made more readily available for the good of the society, thus enhancing the image of science.

In addition to the above benefits from cooperation in discovery-application interphase, industries are employing more and more graduates and research staff in the production, research and development wings of their set ups. A clearer understanding of the requirements of industry would certainly improve the suitability and employability of graduates from the universities. Further, in view of the very fast rate of growth of knowledge in all the disciplines of science, there is an increasing need for periodical retraining and refresher courses for scientists in the industry. In addition, need is being felt for organisation of continuous correspondence courses as well as part-time or evening programmes for improving the qualifications of working scientists of exposing them to newer techniques.

The main advantages, therefore, of a closer cooperation between universities and industrial concerns would be: (i) to make the teaching and research in the universities more relevant to the requirements of industry and more meaningful for their future role in solution of actual problems, (ii) to facilitate scientists in industry to learn the latest advances and techniques in their fields and thus, (iii) to improve the image of science by better employability of graduates and greater application of science to social welfare.

In 1970 two reports in the UK emphasized the essential need for cooperation between universities and industry for a healthy development of both these streams. While the Eaborn Report[3] dealt exclusively with chemistry, Docksey Report[4] included all the disciplines and also suggested a number of practical methods of cooperation between the two. Another report[5] was published in 1975 on the academic-industrial collaboration in the engineering research. In a more recent report, Smith and Karlesky[6] have tried to analyse the factors which have led to a decline in the university industry interactions in recent years in USA.

In this paper an attempt has been made to suggest various illustrative forms of cooperation particularly in developing countries and to bring out factors which may be of some significance for success in these directions.

Assistance from Universities to Industry

In addition to training suitable manpower at different levels for the industry the following are some of the directions in which the Universities can offer significant assistance to the industry:

(a) *Consultancy:* Consultancy is generally considered in more advanced countries as the biggest single factor in establishing a rapport between universities and industries[7]. Worked in an appropriate manner, this form of cooperation does enable the industry to profit directly from the expertise and specialised knowledge of the University teacher, but the teacher is also able to bring back to his institution a broader perspective of the practical applications of the researches being carried out; often this leads to encouraging a greater sense of satisfaction and purposefulness in the work of the team or school. In addition to improving the quality and relevancy of the research effort, this new knowledge is generally of great value to the teacher in making his teaching in the class room also more interesting and useful. In a country like India consultancy services to industry are generally provided by the specialised laboratories like those of CSIR. Very few university teachers are yet involved in such an activity.

In choosing consultants, the industry is often more concerned with the prestige associated with the name of a reputed scientist rather than the technical advice he can tender. It would be more advantageous if less senior members of staff with sufficient experience and flair for application of research are given preference to very busy senior people. These younger scientists are likely to derive much more advantage from such interactions in the development of a new outlook. Wherever possible, a group of two or three (forming a unit) may be preferred for this consultancy work. The members of this unit would be able to have continuing meaningful dialogue and exchange of views amongst themselves and periodically with a similar unit in the industry. Such active consultancy should lead to formulation of more meaningful joint research projects also.

(b) *Joint Research Projects:* A number of long range problems in industry require multi-disciplinary approach. It is often beyond the means of an industry to engage whole-time experts in many different disciplines. Formulation of such joint projects involving teachers from different disciplines in the University would be of invaluable help to the industry and rectify the above deficiency in its internal set-up. In addition, formulation of such projects may initiate for the first time in some cases multi-disciplinary cooperation within the University itself.

In many countries like UK and USA, concerted efforts are being made in these directions. For example in UK, the Science Research Council has evolved a system of Cooperative Awards in Pure Sciences (CAPS) and the success of this experiment has led to its extension to Cooperative Awards in Science and Engineering (CASE) Scheme. In USA, there are several such collaborative research projects between universities and industrial concerns: e.g., Harvard and Monsanto in the fields of bio-chemistry and biology of organogenesis.

In India the work carried out in many laboratories or organisations like the CSIR is often accepted for the Ph.D. degree of the University where the research worker got his qualifying B.Sc. Honours/M.Sc. degree. There is generally a formal necessity that the work should be supervised by two persons—one belonging to the Laboratory and the other to the University concerned. Such joint efforts generally suffer from lack of possibilities of mutual discussions. Recent schemes initiated by the University Grants Commission facilitating exchange of research workers and teachers between the Laboratories and the Universities should be a great help in making such joint projects more purposeful.

In spite of the lack of well-coordinated joint research projects between the universities and industries in our country, quite a large number of such illustrative flourishing programmes developed mainly on the basis of individual and personal enthusiasms can be cited:

(i) Bengal Chemical and Pharmaceutical Works (BCPW), which under the enthusiastic guidance of Prof. Prafulla Chandra Ray in cooperation with Dr. Amulya Charan Bose put out 300 allopathic medicines for sale as early as 1894[8];

(ii) Anthraquinone and triphenylmethane dyes developed by Profs. B.D. Tilak and S.V. Sunthankar respectively in the Department of Chemical Technology, Bombay University and being produced by the Indian Dyestuff Industries at Kalyan and United Dyestuff Industries, Bombay[9]; and

(iii) Silicon materials developed by Prof. A.R. Vasudev Murthy at Indian Institute of Science, Bangalore and being produced by Mettur Chemicals[9].

(c) *Continuing Education of Research Workers in Industry* : With the fastly advancing frontiers of science, provision of facilities in the University, whereby workers can have access to periodical refresher courses or recourse to continuous advanced programmes like those carried out by the Open University Systems, enables them to have freshness in outlook and contacts with newer ideas and techniques. This is becoming more and more necessary as the gap between development of basic idea (concept/technique) in the Laboratory and its application to industry is becoming extremely narrow. In more advanced countries, short vacation courses leading to higher academic qualifications also are receiving greater attention; details of three such courses in USA were reported recently in the *Chemical and Engineering News*[10].

Assistance from Industry to Universities

(a) *Financial Assistance:* No body can deny the immense profits that the industry, particularly if it is vigilant and progressive, can derive from utilisation of results of scientific researches in the academic laboratories. The industry, therefore, in more advanced countries has found it to its advantage to make provision for some research grants/fellowships etc. to the Universities. Bell Laboratories, for example in USA, maintain a large number of individual scientific and technological arrangements with universities around the country. A collaborative programme at MIT actually involves 12 member companies who pay $ 29,000 to $ 1,00,000 per year depending on their size,and volume. A greater benefit from such schemes is the development of interest in the industry about researches being carried out in academic laboratories and a better appreciation of each other's efforts to the mutual advantage of both.

In India the industries are sponsoring a number of research projects for the CSIR Laboratories but very few cases of similar research sponsored from the industry to University Laboratories are yet known. In fact, the figures in table 1 show that although the national expenditure on scientific research and development in India has increased from about 11 million to 5134 million rupees during the three decades since independence, the private industry, which is a major beneficiary of the establishment of a technological base in the country, does not contribute more than an insignificant fraction (10%) of the total financial in-put. This is to my mind a serious lacuna which harms the industry itself in the long run, as it is unable to keep itself uptodate and adopt modifications and innovations towards the improvement of its quality and efficiency.

(b) *Industrial Experience for Students:* For students of applied science and engineering, a certain amount of experience in the industry is often considered essential for the students before they can qualify for their degrees. Such experience often takes the form of summer vacation employment and in some countries like Cuba, the programmes often involve almost half of students' time in industry. In between these two extremes are the increasingly more popular in North America, "Cooperative Education" or "Work

Table 1

NATIONAL EXPENDITURE (IN MILLION OF RUPEES) ON SCIENTIFIC RESEARCH AND DEVELOPMENT IN INDIA

Year	1948-49	1958-59	1965-66	1973-74	1974-75	1975-76	1976-77
Central Goverment	—	211·8	624·5	1990·5	2794·4	3544·4	4187·0
State Goverment	—	16·0	35·1	241·3	292·8	323·3	459·1
Private Sector	—	1·5	24·3	303·5	356·8	424·2	488·1
Total	11·0	235·3	683·9	2535·3	3444·0	4291·9	5134·2

Study" programmes and their United Kingdom Counterpart "Sandwich" courses in a variety of patterns[11]. Choosing chemistry courses as an example, there were 48 schools offering cooperative programmes in the United States in 1973[12] while there were sandwich degree courses in 23 institutions in UK in 1975. In India, such experience in industry is still generally limited to engineering students. However, there is a growing awareness of such contacts in the universities. For example, some departments of Osmania University in Hyderabad and of Ravi Shankar University in Raipur are reported to have made some commendable efforts for students of pure sciences also in such programmes.

Meetings and Conferences

For fostering closer University-industry cooperation, one of the most important steps would be to bring together the staff from Universities and industries for group discussions, meetings or/and conferences at formal and/or informal levels. By establishing a channel of face-to-face communication with the obvious advantages of immediate response, reaction and feedback, such get-togethers can be of great value in exploring additional forms of cooperation in a more realistic manner. Further, these get-togethers would be of great help in breaking down any psychological barriers (academicians underrating applied research as intellectually inferior and the applied scientists considering the academicians' contributions of no real practical value to society), which unfortunately exist sometimes between the academic staff of the Universities and practitioners in industry.

There are many different scales at which such meetings can be arranged ranging from large conferences to small committees. From the author's personal experience, one of the best forms in which such meetings could be arranged is the system of Gordon Research Conferences in USA. These Conferences were established in 1931 as a voluntary, non-profit corporation "to provide an opportunity for free and unhurried discussions of major problems in areas of science where current research is uncovering new frontiers . . . The attendance at each conference is limited in number (approximately 100) to encourage informal discussion and to make it easier for conferees to become acquainted . . . The persons attending each Conference include outstanding men in the field under consideration. There should be representation from academic and industrial laboratories, and the laboratories of endowed institutions and government agencies . . .". "It is an established policy of the Gordon Research Conferences that all information presented is off the record and may not be quoted or cited publicly without specific authorization of the individual making the contribution, whether this be a formal presentation or in discussion".

In UK the effort in this direction at the national level has taken the form of the constitution of a Standing Committee on the Relations between Higher Education and Industry[13]. "This meets twice a year to review and improve existing cooperation to seek ways of initiating further cooperation". Another step in a similar direction of a limited but probably more intimate nature is the establishment[14] of panels of the Institute of Petroleum's Hydrocarbon Research Group devoted to spectroscopy, hydrocarbon chemistry and mass spectroscopy. Each of these panels consists of university scientists working in the chosen field with their opposite numbers from sponsoring industrial laboratories.

The professional societies can play a very useful role in this direction. The Indian Chemical Society has been arranging an annual convention of chemists in important centres of research for the last fifteen years and since 1964, provision has been made for a section of papers dealing with Industrial Chemistry and Chemical Engineering Subjects. A survey of the papers submitted annually at the conventions shows that the numbers of papers on such topics varied from 10 to 25% of all the papers submitted in different branches of chemistry. Since 1965, the Chemical Research Committee of the CSIR, the Society of Biological Chemists and the Institute of Chemists have gradually begun to participate in the Convention making it representative of chemists of the country in general. In addition to papers on applied aspects, symposia on subjects of interest to research workers in the fundamental and applied areas have been often arranged during the last 12 years. A few of these are listed below :

(i) Symposium on 'Chemical Industry and State Development' in 1964 at the Convention held at Allahbabad University.

(ii) Symposium on 'Cooperation between Industry and Scientific Institutions' in 1970 held at the Indian Institute of Technology, Madras.

(iii) Symposium on 'Industrial Development in U.P. in the context of Employment Potential for Young Scientists and Technologists' in 1972 held at Allahabad.

(iv) Symposium on 'Research and Chemical Industry in India' held at Calcutta in 1973; the main themes were concerned with R and D in cement, coal and pharmaceutical industries.

(v) Symposium on 'Chemistry and Environment' at the Convention held at Roorkee in 1975.

In addition to the professional societies, organisations like the CSIR and BARC have also been arranging such conferences at the national level. For example, in December 1965, the CSIR organised at Delhi a "Get-together of this kind at a national scale and was attended by more than 1000 representatives from government departments, industrial firms, research institutes and universities. The over-all coverage of this get-together is indicated from the list of sections in which the deliberations at the get-together were divided:

(1) Electronics, Instruments, Radio, Television, Public Address Systems.
(2) Industrial Organic Chemicals, Biochemicals, Dyes and Intermediates, Rubber, Resins, Adhesives, Plastics, Paints, Varnishes, Surface Coatings.
(3) Inorganic and Heavy Chemicals, Fertilisers, Cement and Marine Chemicals.
(4) Drugs & Pharmaceuticals, Medicinal & Aromatic Plants, Public Health Engineering.
(5) Chemical Plant & Equipment, Electrical & Mechanical Engineering, Agricultural, Textile & Mining Machinery, Automobiles.
(6) Food, Agriculture, Fish, Meat, Sugar, Tea, Coffee, Oil-seeds, & Edible Oils.
(7) Metallurgy: Iron & Steel, Non-ferrous Metals.
(8) Paper, Pulp, Forestry, Textiles, Man-made Fibres, Wool, Leather, & Plywood.
(9) Mining, Ores, Minerals, Geophysics & Oceanography.
(10) Petroleum Refining, Petrochemicals, Petroleum Technology and Oil & Gas Exploration.
(11) Energy & Coal.
(12) Glass, Ceramics, Enamels, Pottery, Refractories & Mica Industries.
(13) Aeronautical Engineering: Aircraft Structures, Materials, Propulsion Systems & Aviation Fuel.
(14) Buildings, Roads & Civil Engineering Materials.
(15) Research Utilisation, Cooperation between Research & Industry, Policies on Research & Development.

In addition to annual conventions on different topics of science, BARC is often the centre of other interesting discussions and symposia. For example, a group discussion on 'Photo-Chemistry' was arranged in 1978 and was attended by chemists from the Universities, CSIR and other applied laboratories, BARC and related industries. The broad themes discussed were: (i) Organic Photo-Chemistry, (ii) Lasers in Chemistry, (iii) Chemical Approaches to utilisation of solar energy, and (iv) Photo-chemistry in pollution control. In addition to exchange of ideas and information, the main objective was to identify a few important topical problems and laboratories, where concerted efforts could be supported in these directions.

Conclusion

In the preceding pages, an attempt has been made to present a bird's eye view of some illustrative directions of useful cooperation between universities and industry. In India, there are a number of national and regional laboratories which have been established mainly to carry out industrial research and find useful as well as economic outlets for the resources of the region. Such laboratories can play the role of very useful bridges between the Universities and the industry, as can be exemplified by the close liason between the Central Leather Research Institute and the University of Madras. Although there are many examples of really fruitful cooperation between Universities and laboratories on individual basis, there is an urgent need of working out a more permanent mechanism to establish such links and to facilitate their growth in a planned manner.

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An Analysis of Factor Influencing Faculty Attitudes Toward Changes in the US Tenure System

YORAM NEUMANN AND EPHRAIN BEN-BARUCH

The Tenure Problem and Potential Changes

The tenure system adopted by most US universities allows a faculty member a period at non-tenured status after which he is entitled to a formal assessment. This assessment results in the dismissal of the faculty member or the decision to grant him life employment (tenure). This system was codified in 1940 by the American Association of University Professors and the Association of American Colleges.

Several problems of the present model have been raised and dealt with by scholars in higher education. Shull (1976) is concerned with the high ratio of tenured to non-tenured faculty members. In many cases, more than half the faculty is tenured. Shulman (1971) related the tenure system to other issues such as: academic freedom, "deadwood" faculty, university enrolment, institutional finances, etc. University enrolment figures are presently at a no growth state and are expected to remain at the same level or even to decrease (Abelson, 1972; Vetter, 1972). Similar trends and even cutbacks have occurred in federal programs and in funds for higher education. Some areas have suffered drastic reduction and even elimination of programs (Brennan, 1972; Kennedy et. al., 1972). Thus, scarce resources, i.e., decreasing enrolment and decreasing funds for research and other programs create the necessity to re-examine, tighten or to change the tenure system. Several strategies for change were discussed in recent years. Cartter (1971) emphasized the need to change the tenure system and to create a mechanism in which non-productive faculty can be replaced. One of the alternatives that he discusses was to replace the tenure system by periodically renewable contracts. Carr (1972) suggested that tenure need not be abandoned as an ideal but that the criteria for tenure must be raised.

The present study is an attempt to assess the relative salience of the four factors that affect faculty attitudes toward changes in the tenure system. The two specific changes that this study explores are: (1) replacing tenure by five year contract, and (2) raising the criteria for tenure for assistant professors. The four factors are: (1) self-esteem, (2) research satisfaction, (3) faculty power in decision-making and, (4) seniority-based compensation system (egalitararian attitude).

Factors Affecting Faculty Attitudes

The identification of factors which affect faculty attitudes toward changing the tenure system is important for several reasons. First, it helps to specify the conditions under which the change in the system will be effective. Second, it clarifies the basis and criteria upon which faculty members in university departments operate. Third, it is the first stage toward building a model of attitudinal change of faculty in higher education. Thus, the identification of dominant factors has both research and policy relevance.

However, the identification of factors alone might not be sufficient; their explications and categorization as well as the relationships among them need some clarification too. *Self-esteem* and *research satisfaction* are social-psychological factors grounded in the personal traits and needs of the faculty member rather than in the organizational structure of his institution or in the specifics of his discipline. It is hypothesized that these two factors are positively and strongly related. Moreover, in some cases (the physical sciences) the association can be so strong as if they were two names for one factor.

High self-esteem is the subjective feeling of the researcher ranking his work and relative position high in the scale, compared to his peers. Usually, such high ranking is expected to be determined or supported by external criteria such as publications, prestige of journals, invitations to congresses, lectures, etc. However, a close examination of this issue does not always find high empirical correlation between the external criteria and the subjective feelings of high self-esteem. Whether these criteria are used or not-they exist and may serve as a relatively objective device to measure the degree of fitness between the subjective feelings and reality.

This is not exactly and not always the case with the factor called research satisfaction. A researcher can be completely happy and satisfied with the topics and results of his research even in the unusual case when his peers think that his research contribution is doubtful. Research satisfaction is based much more on the subjective, individual interest, needs, and expectations. In many disciplines it is hard, or impossible, to find external criteria to judge this satisfaction.

The other couple of factors: faculty power in decision-making and seniority-based (egalitarian) system of compensations are influenced by the organizational structure of the particular institution and are related to the particular scientific community of peers. Individual needs and interests are less important while the perceived power structure, shared value and ideology are dominant. These two factors stress the department, the faculty and the scientific community rather than the individual. However, each of the two emphasize different facets and pursue different ends. Faculty power in decision-making is concerned mainly with the particular institution or department. Members of these departments obtained their right to evaluate peers and protect their department against any external intervention.

The seniority-based system of compensation is based on a different set of conceptions and norms on merit, emphasizing the egalitarian ideology, rather than merit based on competition and personal achievements. While the first couple of factors are expected to be positively associated—the second couple are expected to be negatively associated.

Also, self-esteem and faculty power are expected to be positively related (probably more strongly in the physical sciences) while the research satisfaction and seniority based compensation system are expected to be more strongly related and salient in the social sciences.

Self-esteem as one of the major variables which affect individual attitudes (Korman, 1966) is hypothesized to be possitively associated with attitudes toward change in the tenure system. In other words, those who perceive themselves as being in the top of their field would tend to adopt changes more easily than those who show less confidence in their abilities.

Faculty power is expected to act against replacing tenure by another system and to a lesser extent against raising the criteria for tenure for assistant professors. That is, faculty members with high influence in decision-making tend to have more negative attitudes towards replacing the system which gives them power with another system which would probably decrease their power. Faculty members at institutions where the faculty group has low influence on decision making would be less likely to oppose change.

Research satisfaction is hypothesized to be positively related to attitudes toward changes in the tenure system. Those who are satisfied with their research activities are expected to be those who also publish their research. Since changing the tenure standards is most likely to result in revising the publication standards for tenure, those who are satisfied with their research will express more favourable attitudes toward the change than those who are not.

Seniority based compensation system as a norm in academe acts against the norm of meritocracy. In other words, everyone is being rewarded equally and not according to performance. This egalitarian attitude would negatively affect the attitudes toward changes in the tenure system. The rationale is simple: those who advocate an egalitarian system are usually those who believe that rewards allocation should not be affected by merit and performance. Therefore, they are expected to oppose any change in the tenure system that increases the importance of research and meritocracy in the tenure decision.

In sum, this study will test two models of change in the tenure system. The only difference between the two models is in the dependent variable. In the first model, replacing tenure by a five year contract is the dependent variable whereas raising criteria for tenure for asistant professor is the dependent variable in the second model.

Model 1

Dependent Variable: Replacing tenure by a five year contract
Independent Variables: Self-esteem
Faculty Power
Research Satisfaction
Egalitarian Attitude

Model 2

Dependent Variable: Raising the criteria for tenure for assistant professors
Independent Variables: Self-esteem
Faculty Power
Research Satisfaction
Egalitarian Attitude

These hypotheses could be summarized as follows, with some differences between the physical and social sciences:

Factors	*Five Year Contracts*	*Raising Criteria for Tenure*
High Self-esteem	+	+
High Research Satisfaction	+	+
Faculty Power in Decision-Making	—	+? —?
Seniority-Based System of Compensation	—	—

Methodology

Sample

The sample for this study is a second phase of a longitudinal study. In the first phase, data were collected in 1974 by Wilkes (see Wilkes, 1976). Wilkes' study includes 57 Departments: 15 in Chemistry, 14 in Physics, 14 in Sociology, and 14 in Economics, representing 65 graduate departments that were rated by Roose and Anderson (1971) in the northeastern United States. Within each department, five members were selected and interviewed for a total of 279 respondents. The study's second phase includes the same subgroup of the first. Participants in the second phase were asked to answer a very complicated questionnaire regarding issues in the methodology of science, general principles of science, different styles of doing science, job attitudes and issues in faculty promotion. One hundred-twenty university professors participated in the second phase, 60 from the Social Sciences and 60 from the Physical Sciences. Data for the second phase were collected in 1977. Our test of the attitudes toward changes in the tenure system is based on the second phase with 120 faculty members.

Measures

(1) The two dependent variables in our study were measured by the following items:

If your university was in a no-growth situation, would you favour the following to increase the flow of new faculty into the university;

- (a) Replacing tenure by a five year contract (a ten point scale ranging from 1-strongly oppose to 10-strongly support).
- (b) Raising the criteria for tenure for assistant professors (same scale as la).

(2) The independent variables in our model were measured by the following items:

- (a) Self-esteem: Compared to people doing research in areas related to your interests, where do you feel your abilities generally place you? (a ten point scale ranging from 1—the lowest ten per cent to 10-the top ten per cent).
- (b) Faculty Power: How much influence does the faculty group have with regard to faculty promotions in your department? (a ten point scale ranging from 1-very little to 10-very much).
- (c) Research Satisfaction: Overall, are you satisfied with the research activities aspects of your job? (a ten point scale ranging from 1-very dissatisfied to 10-very satisfied).
- (d) Engalitarian Attitude[1]: Employer and employee agree that as a principle, salary of faculty members should be based on a uniform published schedule with advancement in annual mandatory steps. There shall be no increment for "merit", nor shall a faculty member be advanced more than his annual increment or be advanced to an annual step to which his years in rank do not entitle him. "Merit" can be recognized only through appointment, reappointment, promotion and the granting of tenure. (a ten point scale ranging from 1-strongly oppose to 10-strongly support).

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[1] This item is taken from an actual collective bargaining agreement in higher education. I would like to thank Robert Doherty for providing the exact text of the agreement.

Analysis

The test of both models involves an examination of the relationship between one dependent variable and several independent variables. The multiple regression analysis is appropriate for this purpose. Each model is assessed by the R^2 for the four variables in the model and the beta weight for each independent variable which indicates its' relative salience in predicting a given dependent variable.

The analysis is performed separately for the physical and social sciences in order to control four systemic differences since these sciences structure their activities and function differently (Lodahl and Gordon, 1972).

The relationships among the independent variables are assessed by the Pearson correlations. Again, this analysis is performed seperately for the Physical and the Social Sciences.

Results and Discussion

Table 1

MEANS AND STANDARD DEVIATIONS OF INDEPENDENT AND DEPENDENT VARIABLES

	Physical Sciences		*Social Sciences*	
	Mean	*S.D.*	*Mean*	*S.D.*
Self-esteem	8·10	1·62	8·79	1·26
Faculty Promotion Power	8·09	2·24	8·02	2·07
Research Satisfaction	7·21	1·91	7·50	2·25
Egalitarian Attitude	2·29	1·55	3·00	2·49
Replacing Tenure	3·50	2·68	4·57	3·23
Raising Criteria	6·30	2·72	6·05	2·90

Table 1 presents the means and standard deviations of all the variables in our study for the Physical and Social Sciences. Self-esteem is quite high in academe. The "average" faculty member in the Physical and Social Sciences places himself at the top twenty per cent of his field. Faculty members perceive themselves as having a high level of influence over promotion (an average of 8 out of the maximal assessment of 10 in both the Physical Sciences and the Social Sciences). Research satisfaction is estimated at the high side of the scale in both sciences. The mean attitude toward equality is quite low among university professors. The lowest support for equality was found in the Physical Sciences, in which the research orientation is more dominant.

Distinct differences exist between the faculty attitudes toward the two options of change in the tenure system. There is generally a strong opposition to the replacement of the system by a five year contract, with maximal opposition in physical science. The "average" level of agreement to replace the system is 3·50 (out of ten) in the Physical Sciences and 4·57 in the Social Sciences.

On the other hand, there is a moderate level of support for raising the tenure criteria for assistant professors (6·30 in the Physical Sciences and 6·05 in the Social Sciences). The differences between the two attitudes toward change are not a surprise. The first change, the replacement of the total system, involves and jeopardizes all faculty members. The second change, however, affects only the new assistant professors, therefore it generated less opposition from the senior members of academia.

Table 2

CORRELATIONS AMONG THE INDEPENDENT VARIABLES

	Self-esteem	*Faculty Power*	*Research Satisfaction*	*Egalitarian Attitude*
Self-esteem	—	·13	·55**	·38**
Faculty Power	·17	—	·02	·17
Research Satisfaction	·26*	·05	—	·12
Egalitarian Attitude	·17	·31*	·03	—

(Physical Sciences—Right Diagonal; Social Sciences—Left Diagonal)
*P<05 **P<01

Table 2 presents the correlation matrix among the independent variables. In the Physical Sciences, out of six coefficients only two are statistically significant. A high positive correlation was found between self-esteem and research satisfaction (r=0·55; P<·01). A high correlation is understandable, especially in the Physical Sciences, where the emphasis is on organized, funded research. In such a situation there is a stronger relationship between research activities and rewards than in the Social Sciences (Neumann, 1977). A significant negative correlation was found in the Physical Sciences between self-esteem and egalitarian attitude (r=0.38; P<.01). The group of faculty members which perceives itself as more competent opposes the norm of equality, which plays down the importance of meritocracy. On the other hand, faculty members who perceive themselves as less competent are more receptive to other criteria for allocating rewards which will improve their relative position in the system. This applies most to the physical sciences since their criteria for meritocracy are relatively well specified and the relationship between research accomplishment and success is stronger than in the Social Sciences (Neumann, 1977).

In the Social Sciences, a significant positive correlation was found between self-esteem and research satisfaction (r=0.26; P<.050), but this correlation, though statistically significant, is considerably lower than the same relationship in Physical Sciences ($r=0.55$; $P<.01$). The relatively weak correlation in Social Sciences is partially explained by the relatively weak relationship between research performance and rewards. Thus, satisfaction with research activities is believed to be assessed through the rewards associated with the research endeavour. The higher the relationship between research performance and rewards, the higher the relationship between self-esteem and research satisfaction.

Another interesting finding in the Social Sciences is the negative correlation between faculty power and egalitarian attitude ($r= -0.31$; $P<.05$). In other words, decreasing faculty power over one of its traditional perogatives, i.e. promotion, results in increased acceptance of the egalitarian principle as a criterion for allocation of rewards. It may be a faculty strategy to reduce the power of the other side, in this case the administration, over the allocation of rewards. This tendency of the administration to interfere in what is traditionally considered a faculty perogative is stronger in the Social Sciences than in the Physical Sciences (Lodahl and Gordon, 1973), therefore the existence of this negative relationship, in the Social Sciences between power and equality may be a result of such a phenomenon.

Table 3

REGRESSION RESULTS: DEPENDENT VARIABLE—REPLACING TENURE BY 5 YEAR CONTRACT

Independent Variable	*Physical Sciences*		*Social Sciences*	
	Beta	*r*	*Beta*	*r*
Self-esteem	—·03	·04	·02	—·02
Faculty Promotion Power	—·30*	—·29	—·34*	—·31
Research Satisfaction	·13	·13	·16	·14
Egalitarian Attitude	—·11	—·06	—·07	·04
Multiple Correlation	·33		·36	

*P<05

Table 3 presents the results of the empirical test of the first model, in which the dependent variable is the replacement of the present tenure system by a five year renewable contract. Overall, no substantial differences exist between the Physical and Social Sciences. In both cases, the multiple correlation is relatively low ($r=0.33$ in the Physical Sciences and $r=0.36$ in the Social Sciences), which means that the four predictor model controls only between 11 to 13 per cent of the variance of the dependent variable. As a matter of fact, only one predictor contributes significantly to the explained variance. This predictor is faculty power. In the physical sciences there is a negative relationship between the perception of faculty power and attitudes toward changing the tenure system to a five year contract (beta= —0.30; r= —0.29; P<.05). The same negative relationship was found in the Social Sciences (beta= —0.34; r= —0.31; P<.05). In other words in situations where promotion decisions are made outside the faculty group, faculty members are inclined to move to a five year renewable contract, whereas in situations where the faculty group controls the promotion system, the tendency is to oppose such a move. As we suggested before, low faculty power in promotion decisions may be a result of high administrative interference in departmental decision-making, especially in issues which are normally considered to be faculty domain. In these cases, the central administration controls the tenure system, applies its own criteria and emphasizes additional standards for promotion besides research. The result may be the denial of tenure to a member who would normally be considered by the faculty group as qualified (competent) or the granting of tenure to a member who would not receive tenure under the rigorous meritocracy research standards. In such situations, to avoid a non-universalistic (particularistic) tenure system, the faculty group may be more receiptive to the proposed change than in any other circumstances. This is, of course, only one explanation for the observed phenomenon, and other alternatives are plausible. Overall, there is a highly negative attitude toward replacing the tenure system and this may serve as an important input for the administration of higher education.

Table 4

REGESSION RESULTS: DEPENDENT VARIABLE—RAISING THE CRITERIA FOR TENURE FOR ASSISTANT PROFESSORS

Independent Variable	*Physical Sciences*		*Social Sciences*	
	Beta	*r*	*Beta*	*r*
Self-esteem	·08	·22	·07	·15
Faculty Promotion Power	·04	·00	·01	·21
Research Satisfaction	·43**	·44	—·14	—·13
Egalitarian Attitude	·26	·17	—·66**	—·68
Multiple Correlation	·50		·69	

**P<01

The results of the empirical examination of the second model are presented in Table 4. The dependent variable in this model is raising the tenure criteria for assistant professors. These findings indicate a major difference between the Physical and Social Sciences. In the Physical Sciences, the multiple correlation is 0.5 and it is mainly attributed to one factor, research satisfaction. There is a strong positive relationship in the Physical Sciences between research satisfaction and accepting a higher level of standard for tenure (beta=0.43; r=0.44; p>.01). In other words, those who are satisfied with their research activities agree to implement tougher standards while the other group, less satisfied with its research activities, prefers to maintain the present system.

The Social Sciences, on the other hand, exhibit a different pattern. The multiple correlation is really impressive (r=0.69; P<.01) and the most dominant predictor is egalitarian attitude. In the Social Sciences, there is a very strong negative relationship between the egalitarian attitude and raising the tenure standards (beta= —0.66; r=—0.68; P<.01). This negative relationship means that there is a bitter source of opposition toward the proposed change among those faculty members who adopt the egalitarian norm. From the policy perspective, in such institutions where the Social Science members are less concerned about equality it may be easier to implement the proposed change relative to institutions where the faculty group has a high emphasis on equality.

Conclusions

This study tests attitudes towards two suggested changes in the tenure system. The first change is the replacement of tenure by a five year renewable contract. Self-esteem, research satisfaction, and the egalitarian attitude do not play an important role in predicting faculty attitudes toward such change. Faculty power is negatively related to the acceptance of another system without tenure. If the university is concerned about implementing the proposed change, a place to begin the implementation is in institutions with low faculty power, or alternatively, the university will have to change the power structure and the decision-making processes in order to reduce faculty influence and then implement the proposed change. At universities with long (sometimes centuries-long) tradition—changes in the power structure are very difficult. However even in old, established universities-new departments are often created and these constitute an appropriate place for experimentation with changes in the power structure. The conclusions regarding the first model and strategics for implementing the proposed change are universally applicable to the Physical and Social Sciences, since faculty power is the only relevant predictor in both cases.

The situation in the second model is different. The dominant predictors differ in the Social and Physical Sciences. Research satisfaction is the most dominant predictor in the Physical Sciences and is positively related to accepting tougher tenure criteria for assistant professors. The same predictor has a negligible role in the Social Sciences. The egalitarian attitude has an impressive negative impact on the acceptance of a tougher tenure system in the Social Sciences and by itself controls about fifty per cent of the variance of the dependent variable. On the other hand, this attitude has a minimal effect in the Physical Sciences and controls by itself about four per cent of the variance. We think that the differences between the Physical and

Social Sciences are not a random phenomenon. Structural differences between the two sciences stress the relationship between research inputs and research outcomes through a higher level of predictability in the Physical Sciences and obscure this connection in the Social Sciences (Neumann, 1977). The result is that research related factors, e.g. the egalitarian attitude, are the most influential in the Social Sciences. Consequently, in order to maximize the acceptance of the proposed change, university central administration has to adopt a differential policy.

In the Physical Sciences, the path to accepting a more rigorous system is through increasing the emphasis on research and operating better conditions for research activities. This study suggests that a different strategy must be adopted for the Social Sciences, where the emphasis is more on particularistic criteria. There it is suggested that change begin with departments which are less focused on egalitarianism. With the other departments in the Social Sciences, an attempt must be made to reduce their favorable attitudes toward egalitarianism by increasing the relative salience of merit-related criteria.

At last, one cautionary note, these policy implications and recommendations are based on the results of one study. This study makes several assumptions about cause and effect based upon logical argumentation. Four factors were analyzed as independent variables predicting eventual changes in the tenure system. We can think of additional factors which influence attitudes toward acceptance or rejection of change in the tenure system such as: the style of development of the different sciences (are there universally accepted standards and criteria for judgment of scientific achievements or are these criteria still in dispute?) pure versus applied sciences; disciplinary versus interdisciplinary sciences. Future studies are needed in order to further explore these and other potential factors.

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Purposeful Physics Curricula : A Systems Model

M.V. ANANTHAKRISHNAN

The effectiveness of any educational system or training programme in a country is evident from the economic and cultural development of that country. India is a country with an ancient cultural heritage and traditionally has an agricultural base. It is amidst this that the country has gone in for rapid industrialisation.

The present educational methodology in this country treats "pure sciences" and "applied technology" as two water-tight compartments. As a result, the interdisciplinary concept is virtually absent. Therefore, science graduates find it difficult to fit into industry without prior training (Ananthakrishnan, 1974).

Objectives lie at the very heart of the planning process whether one is planning a curriculum or a single classroom session. One has to decide, after due consideration, the nature of the relationship between the "ends" that one wishes to accomplish and the "means" that are available for use (Davies, 1976). To quote Ackoff (1970):

> Wisdom is the ability to see the long-run consequences of current actions, the willingness to sacrifice short-run gains for large long-run benefits, and the ability to control what is controllable and not fret over what is not.

When one speaks of education, one has necessarily to make reference to two issues viz., what are the aims and objectives of education and what are the defects in the existing system? (Acharlu, 1975). This approach has relevance because "if everything is alright with the ends and means of education, there would be nothing left for us to do except evaluating what is being done and suggesting ways and means of improving the system in consonance with its ideals and objectives" (Acharlu, 1975).

Systems Approach and Curriculum Development

Systems Approach: One of the general tenets of the general systems theory is that various properties are inherent and central to all functioning systems such as found in the mechanical, biological and social worlds. Systems are any set of components which could be looked at as working together for an overall objective of the whole (Athey, 1977). In general, a system comprises of its components, its system boundaries and the environment and interfaces.

Components are the primary elements which comprise a system whereas the system boundaries comprise that set of components which can be directly influenced or controlled in a design. The environment includes all those factors which have an influence on the effectiveness of the system, but which are not controllable. Interfaces are those boundaries where two systems meet and can be internal and/or external to the system itself.

Curriculum Development : Curriculum is defined as all the learning experiences provided for children and youth under the direction of the schools/colleges. It, therefore, includes the programme of studies, methods, techniques and strategies of teaching.

The development of a curriculum and accompanying instructional material is a continuous process in the field of education. Consequently, the steps involved in developing a new curriculum (or in revising an existing one) have been fairly established. Curriculum development can take place as a joint activity throughout the session or it can take the form of a resource unit made available as and when needed (Cook, 1966).

The constructs of any curriculum design consists of three areas, viz., the learner, the society and the organised knowledge. Whereas the learner and the society are equally important, it is the organised knowledge that calls for emphasis in any teaching situation. The organised knowledge is the actual subject-matter that is to be taught in any instructional programme (Gottesman, 1976).

An Overview of Some Studies

The application of a systems concept to curriculum development is a well-established method by now in as far as educational planning and training methodology are concerned. de Graff (1971) came up with the Helical Physics Sequence and the FLIPS programme for teaching undergraduate physics courses at the Univerisity of Michigan (Flint). His Helical Physics Sequence essentially makes use of the concept that learning is gradual and becomes more and more advanced as one goes up the helix. On the other hand, the FLIPS (Flint Introductory Physics Sequence) programme concentrates on the concept of inter-dependence of the various components or modules amongst themselves as well as within a module.

Ananthakrishnan and Nambi (1977) have reported of a systems approach to physical sciences teaching. According to them, integrated science teaching involves the teaching of the various components of science through the medium of group teaching whereby the teachers have to interact amongst themselves. The systems approach, as proposed by the authors, involves the teaching of the three subjects i.e. Physics, Chemistry and Mathematics, in any one of the three ways, viz., independent coverage, inter action between two subjects or interaction amongst all the three. Figure 1 shows a schematic of this concept. From the figure it is evident that the chemistry and mathematics teachers have to co-ordinate with each other as well as with the physics teacher in order to explain the various topics and their applications. However, the physics teacher need only co-ordinate with the chemistry colleague because the former has sufficient knowledge of mathematics to handle such requirements.

Ananthakrishnan and Garg (1978) have given a systems concept to Industrial Engineering education at the post-graduate level. According to them, the guidelines required for proper development of the sub-systems/modules and their interaction(s) are as follows:

(1) All individual self-contained modules are of equal importance.
(2) Every module should have a common basis for its contents.
(3) Subjects that find applications in other areas must be taken as a separate module.
(4) Proper interface components are needed in each module.
(5) Modules should be made up of basic topics only. Peripherals could be left as self-study assignments to the students.
(6) The modules, so selected, should essentially cater to the students'' specialisation requirements.
(7) Every module should be flexible enough to accommodate variations in the students' background.

The authors have proposed a three-level hierarchial model viz., BASIC, Level-1 and Level-2. There are, in all, nineteen basic modules and 22 level-1 modules. The level-2 modules are the electives and depend, to a large extent, on the availability of faculty and students desiring specific areas of specialisation.

Gottesman (1976) proposes a conceptual Curriculum Network for curriculum planning. It is a systems approach model that "diagrams the influence of constructs on philosophy, goals, objectives and instructional programmes". It also shows the flow from philosophy to goals, from goals to objectives and from objectives to instructional programmes. As a finale, evaluation is seen by him as a feedback for not only making improvement during planning but also for reporting to groups on the effectiveness of the curricula.

Purposeful Physics Curricula

The need for a systems approach : A formal education is needed by every individual in order to place him or her on a proper footing in life. In as far

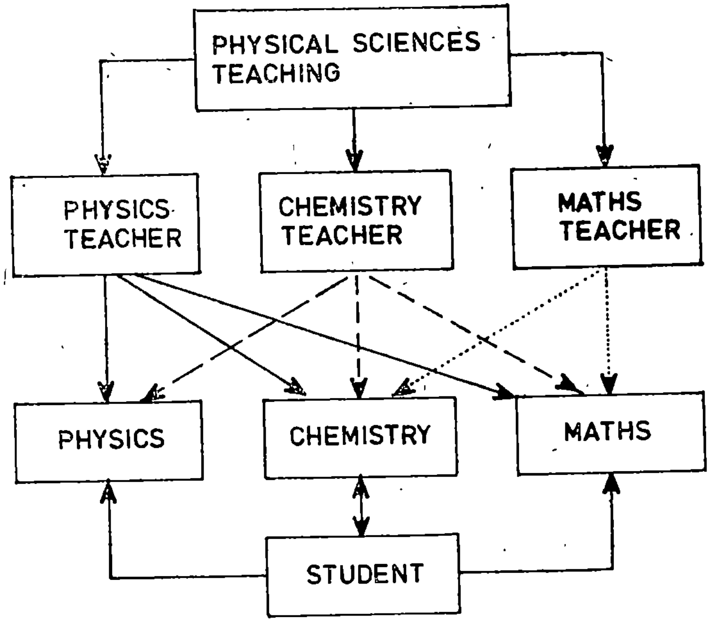

FIG. 1. A SYSTEMS APPROACH TO PHYSICAL SCIENCES TEACHING.

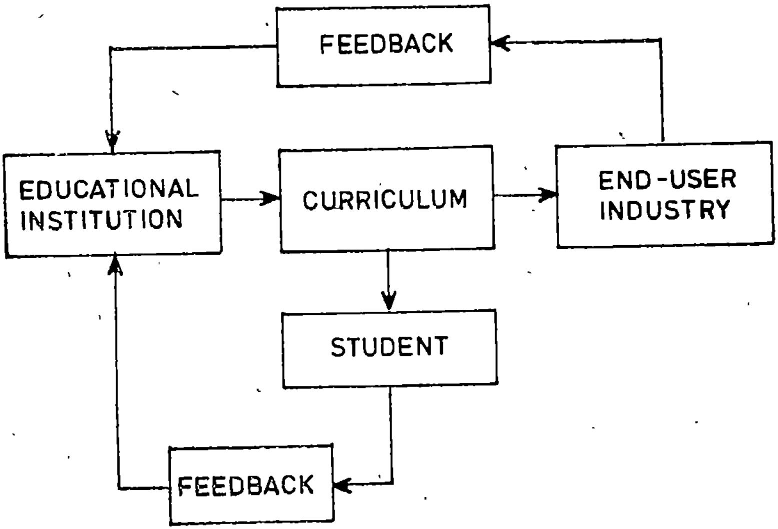

FIG. 2. THE INSTITUTION-STUDENT-INDUSTRY FEEDBACK MODEL FOR PURPOSEFUL CURRICULA

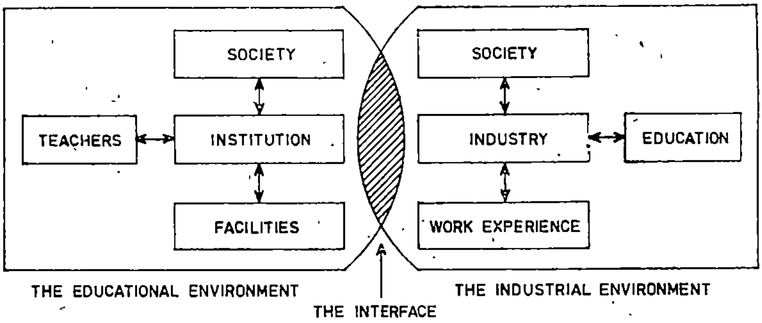

FIG. 3. THE EDUCATIONAL AND INDUSTRIAL ENVIRONMENTS AND THEIR INTERFACE - A CONCEPTUAL MODEL.

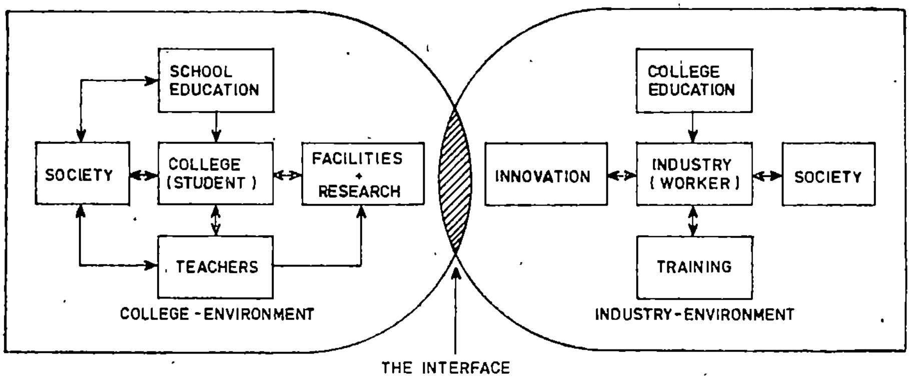

FIG. 4. A SYSTEMS MODEL OF THE INSTITUTIONAL-INDUSTRIAL ENVIRONMENT AND INTERFACE.

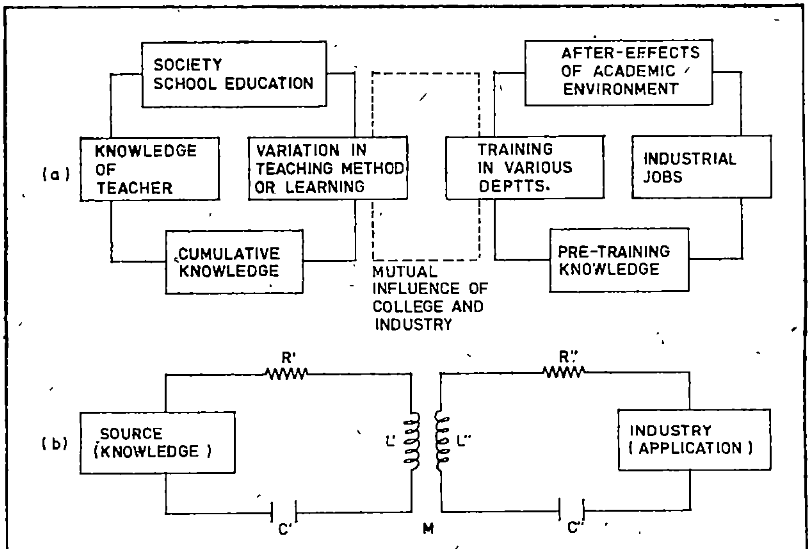

FIG. 5. (a) FORMAL MODEL OF THE PURPOSEFUL APPROACH TO CURRICULUM DEVELOPMENT

(b) THE ANALOG MODEL FOR THE PURPOSEFUL APPROACH TO CURRICULUM DEVELOPMENT as science is concerned, the graduates coming out of the university have various openings to start a professional career. If we now concentrate our attention on the areas of teaching, research and industry, one should ideally find a complementary relationship between teaching/research and industry. Unfortunately, this is not the case with a majority of the institutions and industries (Ananthakrishnan, 1974).

Good teaching and curriculum development demand creative, careful and sensitive planning. In a very real sense, planning is anticipatory decision-making. It involves deciding on what to do and how to do it before any concrete action is taken. When both "ends" and "means" are known, no real problem exists. The problem, however, arises when the ends have not been determined and the means available are unknown. This leaves the teachers and curriculum development experts in a dilemma. It is here that one has to resort to the overall systems approach.

The teaching institution, the student and the end-user (industry) constitute the system with ample scope for feedback channels. An effective systems model will have to basically evolve out of the inputs (from the educational institutions), the receptivity (of the students) and the outputs (reflected by the experiences of the user-industry), Figure 2 is a schematic representation of this systems concept.

The institution-industry environment and interface: The environment existing in the institution and the industry can be said to be made up of :

(1) The social background of the students (or workers).
(2) The educational background of the students (or workers).
(3) The facilities available for practice and shop-floor experience (in the case of colleges) and pre-induction training (in the case of industries).

Figure 3 is a schematic representation of the environmental factors. In as far as the interfacing between the institution and the industry is concerned, a deeper insight is called for to study the nature of this interface. The figure is indicative of a definite interface between the two "environments". However, the size and extent of the interface is dependent on the various factors that exist in real life. It is this interface that is very vital in making or marring a good curriculum. Therefore, one needs factual information on the nature of this interface. One this interface is known (or gauged), it can be exploited to develop a "purposeful" curricula in any subject of interest.

Information systems for "purposeful" Physics curricula: It would not be out of place to once again mention the three sources of information that are essential for any curriculum development activity viz., the teaching institution, the student and the end-user industry. However, the present study will concentrate on only two of these aspects i.e., the teaching institution and the industry. This is necessarily because of the fact that one is attempting to develop a purposeful curricula—one that will help the student fit himself, with very little time-lag, into an industrial environment. Needless to say, such an attempt will tend to be localised to a particular place or region. But it is imperative that this model is a worthwhile starting point that could be made more broad-based in due course.

Relevant and invaluable information was requested from industries and colleges in the metropolis of Bombay. The medium of gathering information was both through questionnaires and personal discussions.

Information from colleges: The colleges were requested to give information on the following aspects:

(1) Teaching methodology
(2) Laboratory work
(3) Evaluation
(4) Support activities
(5) Rethinking on existing curricula
(6) Employment of science graduates

Information from Industries: The enquiries directed to the industries solicited information concerning the following aspects:

(1) Educational background of employees
(2) Nature of jobs handled
(3) On-the-job training needs
(4) Need of physics and its applications
(5) Avenues for improvement of academic programmes offered by the colleges
(6) Continuing education.

Analyses of information received: The opinions of the various colleges are summarised in Table 1. The aspect of "Rethinking on existing curricula" makes interesting reading. The college faculty have expressed a necessity to make the teaching more realistic and suggestions have been put forth for better teaching, effective laboratory work and purposeful evaluation.

Table 2 enlists the view-point of industries on the existing college curricula. Important observations include the need for continuing education and an industry-based project. Continuing education programmes are felt essential in order to keep the employees abreast with the latest developments in science and technology as well as the allied basic concepts. The industry-based project is recommended as an essential prerequisite for qualifying for a degree. This suggestion surely warrants serious consideration and possible implementation.

The MVA Systems Model: The development of the systems model requires that one should be fully familiar with the various parameters that influence the system as well as other systems. Figure 4 is a more pragmatic version of the conceptual model depitcted earlier in Fig. 3 and this will be used to develop the formal analogue model.

Premises: The formal model has been developed on the following premises:

(1) The college provides all the knowledge to the student which is retained and recalled whenever needed. The extent of retention is a personal factor of a particular student.
(2) The efficiency or rate at which a student picks up the knowledge is dependent on his inherent characteristics, social factors, pre-college education and the teaching methodology.
(3) Any variations in the teaching methodology or the learning characteristics will have a transient influence on the efficiency of the teaching situation.
(4) The employee enters industry with a definite amount of theoretical and/or practical knowledge. This will be subsequently used and/or reinforced by the industrial training/experience.
(5) Any industry has to essentially train any new recruit. During this process, the incumbent has to be weaned out before being fitted into the industrial work-situation and environment.
(6) Having entered industry, the employee is, many a time, shifted from one department to another—as a matter of company policy or with an idea to provide all-round knowledge of the organisation. This sets up temporary "re-adjustments" which remain as transient effects until they smoothen out.
(7) The educational institution and the industry need to have a regular liaison with each other if the research activities in the former and the innovations/developments in the latter have to find a place in their dynamic policies. As a consequence, the college must necessarily update and review its syllabi and methodology. Similarly, the industry has to explore evenues to adapt the research findings to its production activities.

Analogues: The formal model for the proposed systems approach is shown in Figure 5. The analogues for the various premises are given in Table 3 with their corresponding equivalences.

The electrical analogues for the factors affecting the individual/educational institutions are represented by R', L' and C', whilst the corresponding analogues for the industrial situation are R", L" and C". The D.C. sources (in the circuit) are the analogues for the knowledge (via the teacher) and the application (from industry) in the respective environments. A D.C. source (and accordingly the analogue circuit) is presumed because (i) knowledge is being imparted at a steady and continuous rate and (ii) applications in industry are being imbibed by the employees in a scheduled and regularised fashion.

The mutual inductance (M) is the electrical analogue for the interaction between the insitution and industry. The degree of influence depends on how closely one works with the other (the electrical equivalent of the proximity and clossеness of the primary and secondary windings of a transformer). Any research/development and/or change in the gamut of education will have its influence on the industrial situation (an electrical analogy of transient currents in either of the circuits affecting the equilibrium state of the other). A similar argument can be extended for explaining the influence of industrial innovations. The other equivalences between the institution-industry cycle and the electrical analogue are mere corollaries.

A sample curriculum: The metal casting industry is one which finds a variety of applications of physics and offers employment opportunities for science graduates. Thus, the inclusion of typical examples (from this area) in an undergraduate physics curriculum would be invaluable—the actual methodology being worked out by the college and industry. As an illustration, let us consider the melting practice in the metals casting industry.

The physical pehnomena involved are: heat transfer, thermal properties of solids/liquids, magnetic induction and heating, electric arcs and their properties. The physics inputs recommended are, therefore; heat and temperature, heat transfer, Ohm's law, electrical heating and Joule's laws, magnetic behaviour of materials, A. C. and D. C. circuits, frequency generators, temperature measurement.

Conclusion

The proposed systems model gives a realistic representation of the vital and oft-misunderstood institution-industry interface. What is needed is an effective control and capitalisation on the various factors that inhibit/accelerate this purposeful co-existence for the ultimate improvement of man's living conditions in this world.

A number of extensions of the proposed model are possible so as to include additional factors and/or refinements in the approach. Some of the factors could be the retention/learning rate of the student/worker, the saturation of research/development activities, influence of political factors, etc.

Acknowledgements

The author wishes to thank the various colleges and industries who contributed their valuable advice/suggestions towards making the systems modelling more mundane. The NITIE authorities are to be thanked for providing all facilities needed for making this research see the light of the day.

Table 1

OPINIONS OF COLLEGES ON PHYSICS CURRICULA

Aspect	*Opinions*
Teaching Methodology	The teaching methodology is evolved both as individual effort as well as a group activity. There is a limited attempt to incorporate typical industrial/real-life applications in the lectures.
Laboratory work	The laboratory assignments are very rarely co-ordinated with the corresponding theory classes. Practical work is done in groups (of 2 each). Guidance is provided through instruction sheets and in-situ guidance by faculty. Laboratory assignments are usually directed towards proving existing laws and determining well-established physical constants. About 50% (of the total time alloted to physics instructions) is spent in laboratory work.
Evaluation	The university examination questions aim at testing the memorising capacity of the students. The questions so set are a mixture of objective and essay-types: The practical assignments (set at the university examinations) are selected from amongst those performed during the regular college classes.
Other activities	Casual visits to industries/research laboratories. Casual lectures by eminent scientists, film-shows, study tours, Scientific journals are subscribed to but referred to by students to a very limited extent. Development of teaching aids is done in a very restricted sense.
Rethinking on existing curricula	Need for designing laboratory assignments so as to reflect the real-life/industrial applications. Suggestion for a semester system with periodic tests to discourage the students from resorting to end-of-the-term preparation as practised now. Objective-type of questions should replace the essay type—to dissuade students from "rote" learning. Moves are afoot to revise the existing curricula.
Placement of graduates	About 50% of the graduates are absorbed by industries. The balance go in for clerical, sales/marketing, research etc. The graduate do not immediately fit into an industrial environment. This is assigned to the lack of any practical bias in the college courses. Attempts are underway to remove this lacuna.

Table 2

OPINIONS OF INDUSTRIES ON SCIENCE GRADUATES/COLLEGE COURSES

Aspect	*Opinions*
Educational Background	About 30% of the employees have basis science degrees.
Nature of jobs handled	Quality control, Inspection, shop-floor supervision, clerical, sales.
On-the-job training requirements	All new incumbents (with basic science degrees) have to necessarily undergo pre-induction training in the industry. This is because of the lack of any "industrial" bias in college classes.
Need of physics and its applications	Physics, being a basic subject, finds a place in virtually every field of industrial production/acitivity.
Avenues for improvement of college courses	Inclusion of typical industrial applications in regular college classes and laboratory assignments. Involvement of technologists in curriculum planning, specialist lecture sessions and industrial visits. Inclusion of industry-based project work as an essential requirement for qualifying for a formal degree.
Continuing Education	Essential for keeping the employees abreast with recent developments in science and technology. The innovation of new instrumentation and processes calls for educating the users on all the basic physical principles involved.

Table 3

ANALOGUES FOR THE VARIOUS PREMISES

Premise	*Analogue*	*Equivalence*
Premise 1	Capacitance	Retention of knowledge imparted in the college.
Premise 2	Resistance	Resistance to change depending on society, school education and teaching.
Premise 3	Inductance	Transient influence of teaching methodology etc. on efficiency of teaching.
Premise 4	Capacitance	Existing knowledge of entrant to industry —periodically updated by on-the-job experience.
Premise 5	Resistance	Resistance to change from an academic environment to a purely industrial one.
Premise 6	Inductance	Temporary read-justments that are warranted by regular rotation on jobs as well as new jobs/assignments.
Premise 7	Mutual Inductance	The existence of an effective liasion between institution and industry is to be realised. Further, any change in one definitedly affects the other.

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Geography, Multiple Process Analysis and the Gozo Project: An Exercise in Interdisciplinary Multi-level Education

RUSSELL KING AND TONY MACELLI

This paper describes the systems-based methodology, which we call multiple process analysis, and the educational structure evolved to study the man-environment complex on the Mediterranean island of Gozo (67·3 sq. km., 22,370 inhabitants), the smaller of the two major islands of the Maltese archipelago. The work forms part of UNESCO's Man and the Biosphere programme, specifically MAB Project No. 7. The Study of Factors Relating to the Development of Minor Island Ecosystems.[1] Funding is from UNESCO and the project is run from the University of Malta.

From the outset the project was conceived as both a research effort and an educational exercise involving a wide range of people with different skills and levels of expertise. To a large extent, these two objectives are mutually reinforcing. In a small island like Gozo a multi-disciplinary approach to the problems of man and environment is necessary to analyse and quantify as much as possible of the whole ecosystem (Busuttil 1972). This involves two practical issues which are the bases of this paper: the academic problem of inter-disciplinary communication; and the logistical problem of marshalling and organising research teams composed of individuals at different levels in their education.

The Gozo Project

The concentration on a small island is justified by MAB Project No. 7 by being able to view many problems of human settlement in microcosm. Geographers too have recognised the value of islands as small scale models (e.g. Perpillou 1966, 18). A Mediterranean small island like Gozo may be regarded as a spatial laboratory particularly appropriate for the examination of two themes: the management of environmental resources by island populations; and the impact of external forces, such as tourism, on the island's life and ecology. Small size and isolation make the exploitation of the island's resources of paramount importance. Smallness implies acute spatial constraints on attempts to increase production or change land use in the face of development needs or population pressure (Gourou 1965). Isolation and peripherality mean that Gozo suffers economic and cultural problems of marginal location.

Institutionally the Gozo Project has its base in the University of Malta. Its strongest link is with the Contemporary Mediterranean Studies programme of the Arts Faculty.[2] However it also involves many people outside the university, including lecturers from the Polytechnic of Malta, academics from overseas, some of whom are visiting lecturers at the University, foreign undergraduate and postgraduate students doing thesis work on Gozo, various local teachers and planners, and Gozitan secondary school students. It directly involves about a hundred persons. This may seem a large number for such a small island (or, indeed, for any research project) but it needs to be stressed that the project is also an educational exercise, and many of its participants are undergraduate students who naturally follow other courses and interests. We shall return later to the organisational and educational aspects of the project.

Necessity for a Systems Paradigm

If we consider the Gozo ecosystem in its widest sense to include both natural and human systems, then we can see that the investigation of the various linkages within and between these systems cannot be effectively carried out within the usual disciplinary frameworks. Traditionally, each discipline selects its object of study and describes it with the aid of its specific tools and language. The juxtaposition of these separate disciplinary discourses often leads to confusion. A more synthetic approach is required which uses an epistemology and a terminology which are common and transposable.

It might be argued that geography comes closest to such an approach but it does not carry the total solution. It does not, for example, embrace an appreciation of socio-cultural dynamics or of relevant political processes. Simply to lump geographers together with other physical and social scientists and hope that they can sort out their respective researches and integrate their results is unlikely to succeed given the lack of a common terminology, of an overarching framework for organisation and of an appropriate format for the final product.

The most appropriate framework for the project is a non-ideological systems approach, employing the neutral terminology—what Harvey (1969, 474) calls the meta-language of systems analysis. Such an approach transcends disciplinary barriers and helps to pre-empt conflicts born of political ideology.[3] However, most undergraduates with no formal training in systems analysis find the structures and jargon of systems research too forbidding. Accordingly one of us developed a simplification of systems research which we hope would enable undergraduates of different subject backgrounds to participate in the project research in such a way that they could see both the intrinsic sense of the particular piece of work they were doing and its relationship to the wider context of the project. The simplified methodology is called multiple process analysis (Macelli 1977).

An Introduction to Multiple Process Analysis

At this simplified level two concepts emerge as crucial vehicles for analysis: *factor* and *process*. A factor may be a single quantifiable measure, a set of measures, an event, a person or a group of people etc. The notion of a factor really becomes meaningful when related to a process which is the most attractive unit or building block of the model. A process may be regarded as a link between certain cause and effect factors such that the former influence the latter through the medium of the process. The idea of a process as identified here is illustrated in Fig. 1. It may be seen that, that, embodying the minimum of theoretical presuppositions, the construct of a process as depicted here is close to our everyday mental representations of reality. Typical examples of processes relevant in Gozo are tourism, soil

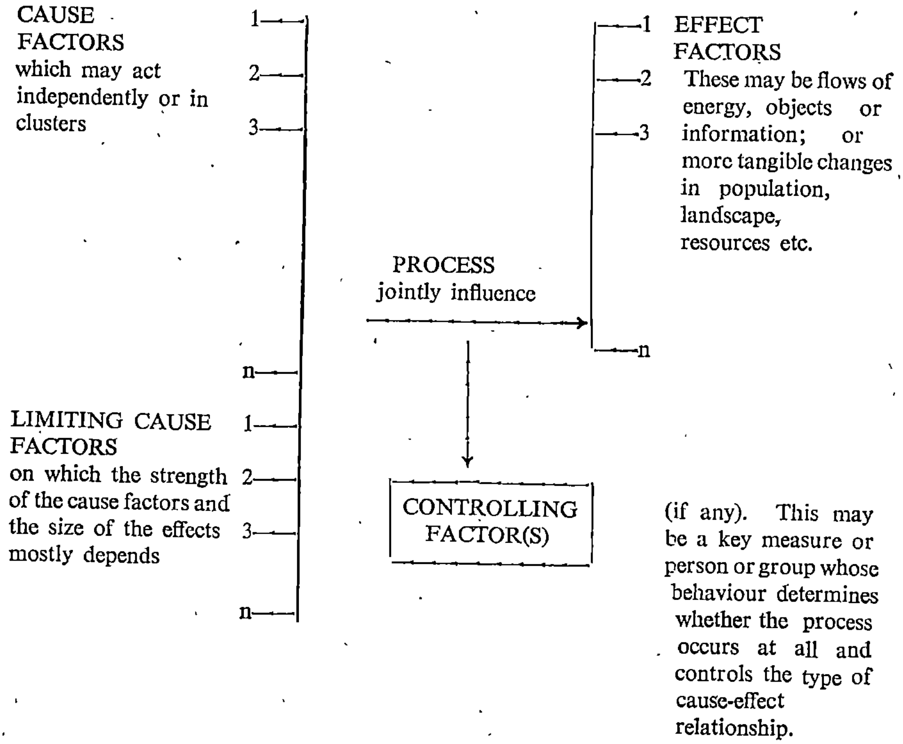
CAUSE FACTORS
which may act independently or in clusters
1
2
3
n
LIMITING CAUSE FACTORS
on which the strength of the cause factors and the size of the effects mostly depends
1
2
3
n
PROCESS
jointly influence
CONTROLLING FACTOR(S)
(if any). This may be a key measure or person or group whose behaviour determines whether the process occurs at all and controls the type of cause-effect relationship.
1
2
3
n
EFFECT FACTORS
These may be flows of energy, objects or information; or more tangible changes in population, landscape, resources etc.

Figure 1. *Diagram of a process: part of a complex system*

erosion, agricultural abandonment, water resource depletion, industrialisation, and the decline in the power of the church.

Being a simplified form of systems analysis, this approach naturally lends itself to systematic treatment. The collection of processes can be organised into filing systems and flow-charts. Highly interconnected factors and processes can be grouped into a subsystem, defined as being loosely connected to other subsystems. Once a framework of factors, processes and systems is built up—this is largely the work of the Project Coordinator (Macelli), the only member of the team who works virtually full time on the project—it is possible to elaborate the description of the processes by the more specific techniques of document analysis, data collection, field work, social surveys etc.

The following is a list of guidelines facilitating the documentation and analysis of a process once it has been identified.

(1) *Name and designation* of the process, plus other identifying details as appropriate (e.g. geographical area or economic sector affected, time period of operation, names of related processes etc.).
(2) List of *casual factors* which influence or change the process and its effects. Are there *limiting factors* which affect the operation of the process? (e.g. the amount of suitable land for cultivating a certain crop, or the number of beds for tourists).
(3) List of *effect factors* which result from the process.
(4) *Disaggregation and aggregation.* What minor processes, if any, does the identified process consist of; and what other processes are there which together with the identified process, make up a more aggregate process; and what would the latter be called?
(5) Description of the *nature of the link* between the cause and effect factors. Is this link changing? If so, what is making it change?
(6) *Affected flows.* Some of the factors, particularly effects, may be flows of various kinds (e.g. remittance money sent back by emigrants) List of such flows, specifying the form of the flow (money, information, etc.), its source and its sink. A flow is a regular displacement.
(7) Description of *controlling factors* (if any) and the strength and range of the control exerted over the process (see Fig. 1). If the controlling agent is a person or organisation, what are the motivations and objectives involved in the control exercised?
(8) *Underlying structure and inertia.* What insofar as can be estimated, are the structures (natural, social, economic, political, spatial) that maintain the process being described? "Structure" may be considered as that part of the system which changes only very slowly if at all, e.g. climate, or a stable market system. What is the expected inertia of the process: i.e. how much resistance will there be to an attempt at radical, deliberate change of the process?
(9) What will the probable *future behaviour* of the process be, first of all without any planned intervention. Secondly, what possible

planned interventions might be envisaged (legislation, ecological measures, educational changes etc.) to affect the process's future behaviour?

(10) *Ideal data* which would be required to fully document the items listed above.

(11) *Actual data* available in an accessible form; also including data which could be collected with moderate effort by fieldwork, questionnaires, etc.

(12) *Quantification.* What are the orders of magnitude or upper/lower ranges estimated for the quantifiable measures involved? Calculation of the extent of interaction between causes and effects (e.g. via input-output, correlation, elasticity techniques) and of rates of long-term change in the processes and associated factors.

(13) Evaluation of the *human implications* of the process. Does it improve human well-being? Does it discriminate for or against certain class or locational groups? Effects of planned changes under (9) above.

(14) Are there any *conflicts* or *problems* arising directly out of the process?

(15) Identification of *feedback* loops. These are closed paths which enable certain effect factors to act as causes by influencing, through other processes, some of the casual factors (e.g. emigrants who return home as wealthy men may act, via the process of return migration or repatriation, as a casual factor stimulating further out migration).

We have already confirmed the usefulness of the above analytical tool for analysing information from written sources and statistical tabulations and for organising questionnaire surveys and interviews. As well as satisfying the criteria already specified of transdisciplinarity and a wide application multiple process analysis is also inherently dynamic. This is in marked contrast to the predominantly static "land use" based studies of islands by geographers in the past (see for example Stamp and Clark 1968).

Four further desiderata were specified as important for the organisation and focus of the project. Firstly the human dimension must be central to the research (e.g. demographic characteristics, economic activities, networks of power, attitudes etc.). Secondly, and related to the first point, is the focus on problem issues and associated clusters of processes. Defining a problem as 'somebody's or some institution's goal impeded by an obstacle' implies that one identifies problems as stated by citizens and planners as well as by academics. For each problem (e.g. the progressive exhaustion and salination of drinking water) one identifies the relevant processes (e.g. the growth of tourism, industry, irrigation, per capita water demands etc.) analysed in the standard form suggested in Fig. 1 and displayed with their various interconnections. The third desideratum is that the island's people should be involved in the project to the fullest extent possible, thereby increasing their own awareness, the usefulness of the research and the quality of the cultural, information available. Finally, there is an important distinction to be made particularly in fieldwork, between processes' behaviour in the 'high' and the 'low' seasons, usually summer and winter respectively (e.g. with regard to farming, fishing, tourism etc.).

At this stage of the research it is not possible to present a complete system of relevant processes—this is left for the final report to be submitted to UNESCO in due course. It should, however, be apparent that certain assemblages of closely related processes will emerge, and that some cause and effect factors will play roles in more than one process. For example, the processes of soil erosion and land use change might be closely linked (each process might influence the other); similarly there might be close tie-ups between tourism and social change, between industrialisation and pollution, between clientelism and the process of local government, between emigration and settlement change, and so on. An effect factor of one process (e.g. population increase as a result of improved disease control) may become a casual factor of another process (such as emigration).

Educational Aspects of the Project

The multiple process approach also explains the educational structure of the project. Instead of being structured around disciplinary groups, the organisation focuses in an interdisciplinary fashion on key processes or assemblages of processes, with a group of around ten persons from different backgrounds and educational levels working on each process-cluster. Each group has a nominal head, usually a University of Malta academic, responsible for overseeing the work and for liasing with other group heads and the project coordinator. The seven main groups are Ecology, Agriculture, Settlement and Infrastructure, Tourism and Culture, Migration, Industrial Development, and Economics and Planning.[4] Within these groups various individual processes were identified and the most important or problematic form the bases for special projects which number about 40. These are obviously too numerous to list in detail, but some examples are : the impact of return migration on a sample village; the historical evolution of settlements; crop marketing; soil erosion; energy use and alternatives; medicinal herbs and folk medicine; coastal exposure and the problem or salt spray (this study was carried out by an English geography student for her undergraduate dissertation).

The devolution of some of the work of the groups into small projects carried out by individuals or small groups of two or three people took place for a number of reasons. Activities that are not large or labour—intensive can proceed quickly without waiting for the slow pace of the main groups. An additional advantage is that the person in charge of a smaller project feels that he/she has a responsibility greater than that which would have existed had that person worked merely as a member of a larger group. Most students react more positively to responsibility than to being a minion supporting someone else's work.

Lecturers in the University of Malta are encouraged to incorporate Gozo Project material into regular classwork and dissertation subjects, and Arts Faculty students can obtain academic credit for working on the project.[5] Most Contemporary Mediterranean Studies students have been very keen to pick up credit on the Gozo Project. The incentives which seem to operate are: (i) having the opportunity (for Gozitan students especially) to study one's own island together with people from Malta and overseas with different points of view; (ii) having the opportunity (for Maltese students) to take a break from routine university work by going to Gozo, which is a peaceful and different environment only an hour or so away; (iii) being given, often for the first time, responsibility for doing an original investigation; (iv) the chance to work in a group and experience interdisciplinary discussions; and (v) having one's basic food and travel expenses paid (a simple flat being available for overnight stops in Gozo).

Communication amongst the groups and project personnel is facilitated by newsletter and various circulated material, and by regular meetings and social occasions. The project started with a series of evening lectures and discussions led by university staff on such topics as the physical geography, history, culture, agriculture and industry of Gozo. These gave project participants a broad multi-faceted background on the island. Special liason meetings occur between heads of groups (including the project coordinator) and between groups whose realms of interest overlap or interact in certain fields (e.g. the Ecology and Agriculture groups). Parties are also arranged for all project participants; held in a rambling eighteenth century building in downtown Valletta, they are a great success and contribute to the social cohesion of the project.

Operational Shortcomings

There are some unforeseen problems and a number of aspects in which expectations about the project are not being fulfilled. These problems and shortcomings can be listed as follows.

Firstly, the very tense political polarisation which currently exists in Malta between the two political parties causes problems at various levels. Civil servants are cautions about giving help and information for fear of offending the governmental party line. Closely linked to the political situation is the administrative cataclysm currently affecting higher education in Malta. The Government seems to see the university as a centre of reactionary criticism, and anything to do with the University, such as the Gozo Project, tends to be viewed with disfavour. The University is starved of funds, staff are not replaced, and in the case of the medical and architectural faculties, they have been dismissed. Many subjects, like economics, are being phased out. A new university, based around the Polytechnic, is being created embodying the student-worker ideal. The traditional University of Malta is now called simply Old University. All this is very unsettling for students generally, including those working on the project. There are also administrative problems within the University, some of which are not unrelated to the above events. Finance for the project is released slowly. Students can get credit for working on the project in the Arts Faculty but not in Science where there is no 'credit system' in operation.

Secondly there is the financial problem. It is especially severe with the Gozo Project because of the desire to involve as many students and other persons as possible in a cooperative educational venture. Lack of money for secretarial help is especially felt and, with so many people involved, expenses need to be monitored carefully and administered frugally.

Thirdly come organisational problems. Since for most people involved in the project this is their first venture of this kind, it is difficult to see how these could be avoided. Three examples will suffice. An error of timing prevented full advantage being taken of the times when students were deciding, in consultation with their lecturers, about dissertation topics. As a result the opportunity to get undergraduates to do their theses on Gozo was missed. Inter-group liason should have started earlier; some duplications of effort occurred. The amount of manpower required for the land use survey was seriously underestimated. Gozitan plots and terraces are so small and carry such a mixture of crops that land use mapping proved tedious and proceeded slowly.

Fourthly, not enough time was spent in attempting to mobilise and utilise a strong nucleus of Gozitans on the project. Gozitan upper secondary school students were happy to come to a party but we were naive to expect them to give up much of their time—for example to assist on the land use survey—since they were involved in their school commitments for A levels etc. One venture which was successful was the scheme whereby forty of them wrote essays on how they perceived the impact of tourism in their island.

Finally there are problems of a more academic nature. Many able paricipants hold back because they have not done similar work before. There also seems to be a reluctance to record facts and ideas on paper. with the result that some potential material is lost. A tendency is also noted for people to agree to some task with excitement but later to become less enthusiastic because of other distractions (perhaps this is human nature!). But the biggest shortcoming is the reluctance of many project participants to adopt the multiple process framework from the outset. This implies that more effort should have been expended initially in drilling participants in the methodology; on the other hand this might have put people off at an early stage and frustrated their keen desire to actually get out and do some fieldwork. Whilst it is true that much of the material can be forced into a format appropriate to the project's systems base after the data have been collected according to more conventional disciplinary frameworks, this requires effort on the part of the coordinator.

Conclusion

This paper has recounted the experience of the Gozo Project with special reference to three developments which could be of relevance to other contexts:

the importance of interdisciplinary student research; the consequent methodology of multiple process analysis used as the academic vehicle for such work; and the organisation of the work into multi-level interdisciplinary groups focussing on the study of processes. The idea of putting students from different disciplines and educational levels together in a group with a common focus is, we feel, particularly important from the educational viewpoint since this situation corresponds closely to the kinds of work many will do after graduating. Students rarely continue to work only with other geographers, economists etc. after graduation. Experience in intedisciplinary communication, in contributing to a joint effort and learning to listen to and appreciate what others have to say, are therefore invaluable.

Like most Mediterranean Universities, the University of Malta has traditionally been concerned with producing professionals—lawyers, theologians, doctors etc.—of which the country already has an abundance. The Gozo Project represents a trend by the University in the direction of greater direct relevance to local problems. Maltese students associated with the project have been able to study their own environment and become more sensitive to local development problems and potentialities. The diverse range of people involved in the project has broadened networks of friendship and professional and academic contact, both within and outside the University. The organisation into groups enables professors to work side by side with students and schoolchildren—a worthwhile experience for both sides.

The notion that physical/human reality is too complex and structurally rich to be conveniently analysed in systems terms is, in fact, a fundamental myth. The point is that it can *only* be analysed in systems terms. To divide reality into sectors belonging to each discipline results in a series of parallel descriptions which can hardly be integrated. To view reality as systems of processes provides not only a functioning model of the whole but also a framework for interdisciplinary understanding. Geography's problem in grappling with systems inthe past has been its traditional concentration on the static elements or artefacts of systems, not with the spatial systems themselves.[6]

Footnotes

1. According to UNESCO the Man and the Biosphere programme 'represents a new, integrated approach to research, training and action aimed at improving man's parternership with the environment. Ivory tower research no longer provides the information needed by those who have to make management decisions in a world of increasing complexity. MAB seeks to break down the obsolete barriers between natural scientists, sociologists, decision-makers, and offers instead an interdisciplinary, problem-oriented approach to the management of natural and man-modified ecosystems ' For the structure of the MAB programme see Kinnea (1975).
2. The Contemporary Mediterranean Studies programme was established following a recommendation of the Dahrendorf Commission on the future of the University of Malta. The programme, which comprises about 20 course units on various Mediterranean themes, seeks to provide an understanding of the Mediterranean environment in the light of its physical and historical evolution with a view to developing

an awareness of current social, economic, political and ecological problems of the region and its constituent countries, and emphasises geography as a basic foundation for the study of several disciplines.

3. An instructive example of this is the Institute for Applied Systems Research in Vienna which successfully carries out analyses of complex systems whilst being founded simultaneously by the USA and the USSR.
4. Two or three of the originally intended main groups could not be established because a leader could not be found who was simultaneously sufficiently knowledgable about the processes of the group and able to spare the time to channel the energies of fellow workers, including students, into cumulative research activity. Malta has only a small university and various fields of expertise—political science for example—are not represented. Accordingly a full-scale group working on political and administrative processes did not prove viable. A group on health similarly fell by the way-side.
5. A credit is awarded for 100 hours of work on the Gozo Project monitored by a member of staff; this counts equivalent to a one-credit lecture course (14 hours of lectures with associated reading, tutorial, essay and exam. work). The staff member is responsible for ensuring the work is sufficiently varied and challenging; the danger to avoid is assigning students purely routine tasks like taking a traffic census, counting forms etc. Two students working on a specific project within the migration group spent about half their time extracting Gozitan migrant data from the files of the Emigration Office in Valletta and the rest tabulating and analysing the information in map, chart and graph form, and interpreting the resultant spatial and temporal trends.
6. For further exploration of this issue see e.g. Bennett and Chorley (1978), Chapman (1977), Langton (1972), Warntz (1973).

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Notes from Research

SOCIAL BACKGROUND AND OCCUPATIONAL ASPIRATIONS OF COLLEGE STUDENTS: A CASE OF SCHEDULED CASTES VIS A VIS NON-SCHEDULED CASTES STUDENTS IN HIGHER EDUCATION*

It is an undeniable fact of Indian history that the scheduled castes have occupied a low status in Indian society. They were, and are even now, subjected to several social, economic and religious disabilities. As such, the scheduled castes form one of the disadvantaged sections of Indian society.

After Independence, in conformity with the avowed aims of our Constitution, viz., socialism, secularism and democracy, the Government of India adopted a policy of "protective discrimination" with a view to redressing the imbalance in the matter of social justice, from which this disadvantaged section suffered for ages.

It should be stressed here that the whole aim of the policy of 'protective discrimination' is to build a strong egalitarian and dynamic society by drawing talent from all strata of society, not excluding the lower castes and classes which hitherto were deprived of that opportunity and whose talent, therefore, remained untapped and undeveloped. Thus it was hoped that better educational economic and occupational facilities would act as factors of motivation for upward social mobility and thereby bring members of the scheduled castes and tribes at par with those of the non-scheduled castes and into the main stream of national life. In short, India, after Independence, has committed herself to the ideal of a modern society based on the bedrock of equality of opportunity.

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Education as an Instrument of Mobility

Formal education, especially higher education, has been considered the main instrument of modernisation. That is, education is supposed to be a means of occupational mobility and as such has been considered to provide equality of opportunity for the scheduled castes and tribes. "Education is the master-key to their uplift. If the directive Principle of State Policy—viz. that the operation of the economic system of wealth and means of production to the common detriment—is to be given practical shape, the state should intensify its efforts to offer greater educatioal opportunities to these communities" (Government of India: Commissioner for Scheduled Castes and Tribes, 1965:15). Accordingly, the Government of India has been taking radical measures to raise their socio-economic status, mainly by providing greater concessions in higher education and reserving 15 per cent of the vacancies for recruitment and a certain percentage for promotion in Government services for them.

However, the policy makers seem to have seldom thought about the relationship between education and social background—Caste and Class. For example, it may be asked whether the present system of elitist education, a colonial heritage, can bring about occupational mobility among the scheduled castes and tribes students who come from a low social background—ritual and class status, suffer from a number of social disabilities, such as absence of literacy and education, a long tradition of oppression and servitude and an absence of a tradition of pursuit of skilled occupations.[3] The available data and studies carried to date show that only a small proportion of scheduled castes and tribes students have been able to reap the major benefits of higher education and modern (White-Collar) occupations. Instead of providing equality of opportunity to all as envisaged by the constitution framers and national policy-makers, the present system of education is creating new inequalities (Chitnis 1972, Premi 1974). Evidence also shows that the incidence of stagnation and drop-out is higher among the scheduled castes and tribes than among the non-scheduled castes students (Aikara, 1980). It means that the lofty idealism of building an egalitarian society cannot be achieved merely by providing economic facilities or extending concessions. It is more important to take note of the model of modernisation viz., the system of education which we adopt as the main means of upward mobility. The whole question of modernisation—mobility through education among the scheduled castes and tribes students—should be viewed in the broader context of their social background which acts as an ancillary agency of socialisation and through which they perceive the opportunity structure.

Ritual and Class Dimensions as Social Background

Caste is a social institution which has manifested itself in Indian society. Caste, as a social institution, has both ritual and non-ritual or secular dimensions. On the one hand, it refers to ritual status, and on the other, it means class status. Thus, the institution of caste includes both sacred and secular or ascribed and achieved dimensions[13].

Caste may be further viewed in terms of one's social background consisting of ritual and/or secular status of family, kins, peers and neighbours and rural/urban background. An individual has, by virtue of his membership of a given caste/class, a corresponding broader or narrower social background in which he participates. To be specific, an individual may have a ritual background on the one hand, and a differing class background on the other: say his ritual background consists of his family's kins, peers' and neighbours' caste status and rural background. On the other hand, his class background, consists of his family's kins', peers' and neighbours' class status and urban background. We shall call the former as, 'ritual social background' and the latter as 'social class background'. In other words, an individual has, ideally, two types of social background—ritual and secular.

However, it should be borne in mind that these two types of social backgrounds are not water-tight compartments; they are interdependent. In actual practice an individual's social background is a combination of ritual and social class background in varying degrees. By and large, there is a close correspondence between caste and class status, a low caste status means a low social class background. and a low class status means a low ritual social background. Available evidence shows that it is only a small proportion of lower-caste members who have a higher class status (Singh, 1978).

Social Background and Formation of Occupational Identity

The occupations one chooses or aspires for reflect one's self-identification in the status hierarchy. According to Super and Bohn: "A person's self-concept, his picture of himself, influences his actions and helps determine the occupations he prefers, the kind of training he undertakes, and the degree of satisfaction he experiences on his jobs" (1970:108). Bordin (1943) postulated that in answering an 'interest inventory', a person indicates his concept of himself in terms of his acceptance of occupational stereotypes. The matter of self-concept is thus translated directly into attitudes and behavioural patterns related to occupations.

The individual member acquires his self-concept or self-image through the process of socialisation. "Socialisation consists of those patterns of action which inculcate in individuals the skills (including knowledge), motives and attitudes necessary for the performance of present or anticipated roles (Aberle, 1961:387). In short, self-concepts are formed in early experiences with other people and with life situations; they are translated into occupational preferences through goal-identification, early experiences and observations. They are reflected in educational and occupational choices and refracted by the resulting experiences. Situational determinants particularly relevant to the self are the role expectations of others, which are incorporated into the self-concept, which an individual forms of himself tentatively after he has perceived the role on his own.

According to Erikson (1950), the social self, in terms of social perception, crystallises through the process of identity formation, which mainly refers to psycho-social self-definition, choice of an occupation and marriage partner, the youth passes from childhood roles to adult ones. In Erikson's view, each society offers to its young members a more or less extended period for a search for an experimentation with social roles which he calls a "moratorium".

Social background, in terms of social stratification, plays an important role in moulding self-concepts of the individual members. Social Action theorists (Parsons, et al., 1951) argue that actors tend to develop differential motivation which, in turn, is the result of the position occupied by them during their pre-adult socialisation period. That means,the very perception of roles in terms of higher/lower aspirations is determined by the type–favourable unfavourable—of social background of which the individual is a part. For instance, an upper-caste member is, because of his high ritual status more likely to aspire for a high and clean occupation, while a backward and a scheduled caste student, is, because of his socialisation into low ritual values more likely to aspire for lower unclean occupations. A high ritual status also enables the upper-caste members to have more contacts with upper-caste-and-class members who act as agents of anticipatory socialisation. Similarly, social class background plays an important role of socialisation. For instance, family class status determines one's material life-chances such as standard of living, housing clothing and food. Children coming from the upper classes have better material facilities than do the lower class families. Better material facilities, thus, provide an initial advantage to the children of the upper classes and enhance their self-concept. Parents with low class status may not only fail to encourage their children to achieve; they may not even recognise the achievement of their children unless their attention drawn to it. The upper class children are also likely to perceive higher occupational goals because of early counselling and guidance. Their self-concept is further enhanced and reinforced by their upper class kins, peers, neighbours and urban background. In short, a higher/lower social background socialises a member into a corresponding social role and occupational image.

Objectives of the Study

(*a*) *Main Objective:* The main objective of the study was to analyse the part played by social background (Caste and Class) in influencing the occupational aspirations of SC students vis a vis non-SC students.

(*b*) *Specific Objectives:* The specific objectives of the study were as follows:

1. To find out whether or not there were any significant differences of the occupational aspirations of the SC and non-SC college students after controlling for the effect of social background.
2. To know whether or not caste and social class background together influenced the occupational aspirations of SC and non-SC students. To be specific, whether or not a lower caste and class status on the one hand and a higher caste and class status on the other, had any significant bearing on the differential occupational aspirations of college students.

Hypotheses

The hypotheses of the study were as follows :

1. The occupational aspirations of the SC students were likely to be lower than those of the non-SC students when the effect of social class background was controlled.
2. The occupational aspirations of the SC students with a low social class background were likely to be lower than those of the non-SC students with a middle and high social class background.

Methodology

(1) *Universe*: The universe of the present study consisted of all the pre-university second year students (1002, only Hindus excluding 192 Muslim) studying in all the colleges of Gulbarga City (Karnataka) during the year 1979-80. The data for the present study were collected by administering a printed semi-structured questionnaire in English and also in Kannada, the regional language of Karnataka State, on PUC II year students who formed the universe of the study.

(2) *Index for Social Class Background:* The social class background of the respondents was measured by constructing a Composite Index for Class Background (CICB). The index consisted the respondents' family class status, fathers' education, occupation, and income (FCS), kins' class status, educational and occupational status of kin-members, such as grand parents, uncles and siblings (KCS), Peers' class status—intimate peers' fathers' occupational status (PCS), Neighbours'.Class Status—educational and occupational status of the neighbours with whom the respondent interacted frequently (NCS), and Rural-urban background—village, town and city.

In order to construct the composite index for class background (CICB), first, scores were given to education, occupation, income and rural-urban background, and then the total scores of all the individual indexes of each respondent were added together and then percentiles were computed. Accordingly, each respondent was divided into three status categories—high, middle and low. The reliability of the index was tested by applying the method of item analyses (Edwards, 1969: 152-54). First, all the respondents were arranged in a descending order according to their CICB scores. Then, 200 respondents with the highest scores from the top, and the lowest scores from the bottom were sorted out as high and low groups, respectively. The differences in the ranks of the high and low groups in their individual dimensions of the CICB viz., FCS, KCS, PCS, NCS and rural-urban background, were tested for their significance by the students "t" test which yielded high values beyond .001 per cent level. Further, the application of the Karl Pearson's Product Moment (R) also yielded a high measure of correlation between different components of the index. The differences in the occupational aspirations of the scheduled castes and non-scheduled castes respondents were tested for their significance by using the x^2 test.

Social Background Characteristics

A large proportion of the respondents were in the age group of 16-20. The mean age for the population was 18·98. The SC students were older than the non-SC students. While 74 per cent of students were from such castes as Brahmins, Lingayats, Marathas, Reddys and Kurubas, 25 per cent were from lower castes viz, scheduled castes and tribes.

The data further revealed that a majority (75 per cent) of the non-SC castes students came from a higher social class background. The fact that higher education continues to be the privilege of the upper castes and classes, shows that the present system of higher education is not suited to a large number of scheduled castes and tribes who came from a lower class status and rural background.

Social Background and Occupational Aspirations

In this section an attempt is made to analyse the influence of social background on the occupational aspirations of SC students vis a vis non-SC students.

(1) *Caste and Family Class Status:* It will be seen from Table V that caste as a ritual status plays an important role in influencing the occupational aspirations of the SC and non-SC students among the low and middle class families. Among the low class families, 74 percent of SC students, as against 57·29 per cent non-SC students has low occupational aspirations. The data further show that 20 per cent of the SC students, as against 27·73 per cent of the non-SC and 6 per cent of the SC students, as against 14·96 per cent of the non-SC had middle and high occupational aspirations, respectively. It is clear from the data that the occupational aspirations of the SC students were significantly lower than those of the non-SC students among the low class families.

An examination of the data in the middle class families shows that the occupational aspirations of the SC students were, to some extent, higher than those of the non-SC students. For instance, only 11 per cent of the SC students, as against 30·46 per cent of the non-SC students, had low occupational aspirations. It is further important to note that 64 per cent of the scheduled castes students, as against 32·97 per cent of the non-SC students had middle level occupational aspirations. However, the proportion of the SC students with higher occupational aspirations was lower (25 per cent) than that of the non-SC students (36·55 per cent).

These data indicate that by and large, the occupational aspirations of the middle class SC students were higher than those of the non-SC students. These data, however, did not support our hypothesis. Possibly, the reason may be that the socio-economic facilities provided by the Government have boosted the self-image of the SC students in higher education.

A further analysis of the data shows that the occupational aspirations of the SC students were higher than those of non-SC students in higher FCS. However, the differences were not statistically significant. The main finding is that while a majority of SC students with low FCS has low occupational aspirations, those with middle and high FCS tended to have higher occupational aspirations than those of the non-SC students in the middle and high status families. One should not, however, rush to the conclusion that in the middle and high class families caste status has ceased to influence one's perception. This is because, the majority of SC students were drawn from a low FCS, while the majority of non-SC students were from middle and high status families. Therefore, a true picture would emerge when the occupational aspirations of the SC students with low FCS are compared with those of the non-SC students with middle and high FCS.

From Table 1, it will be seen that there were significant differences in the occupational aspirations of the SC students with low FCS and the non-SC students with low FCS. There were also significant differences between SC students with low FCS and non-SC students with middle FCS on the one hand and high FCS on the other (see columns 2 & 6, and 2 & 9), this means, despite the oconstitutional guarantees, a majority of SC students continue to have low occupational aspirations, while the higher castes, relatively speaking, perceive higher occupations.

Table 1

PERCENTAGE DISTRIBUTION OF OCCUPATIONAL ASPIRATIONS SCHEDULED CASTES AND NON-SCHEDULED CASTES STUDENTS BY FCS

Occupational Aspirations	*Low*			*Middle*			*High*		
	S.C.	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*	*S.C.*	*Non SC*	*Total*
1	2	3	4	5	6	7	8	9	10
Low	74	57·29	65	11	30·46	27	4	14·17	14
Middle	20	27·73	24	64	32·97	38	33	21·45	22
High	6	14·96	11	25	36·55	35	63	64·36	64
Total %	100	100	100	100	100	100	100	100	100
Total No.	200	274	474	61	279	340	27	261	288

$x^2=16\cdot146<\cdot001$ $x^2=21\cdot207<\cdot001$ $x^2=3\cdot57>\cdot05$
df=2 df=2 df=2

Sl. No.	*Coloumns*	x^2
1	2 and 6	$=97\cdot6$ 2df, $<\cdot01$
2	2 and 9	$=198\cdot7$ df$=2<\cdot01$

(2) *Caste and Kins' Class Status:* Data in Table 2 reveal that the occupational aspirations of the SC students were significantly lower than those of the non-SC students with low KCS.* It was also found that the occupational aspirations of the SC students with low KCS were lower than those of the non-SC students with middle and high KCS. For instance, 55 per cent of SC students with low KCS, as against 21·42 per cent and 6·94 per cent of non-SC students with middle and high KCS, respectively, had low occupational aspirations. Similarly, only 14 per cent of SC students, as against 51·29 per cent and, 75 per cent of the middle and high KCS non-SC students, respectively, had high occupational aspirations (see columns 2 and 6, 2 and 9). It is clear that a low caste and low KCS and a high caste and high KCS reinforce each other and influence the occupational aspirations of college students.

(3) *Caste and Peers' Status:* Data presented in Table 3 show that there were significant differences in the occupational aspirations of the SC and non-SC students in the low PCS category, while in the middle and high PCS categories the differences were not statistically significant, because the proportion of the SC students in both the categories was low.

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*A discussion of the middle and high KCS categories is omitted as the absolute figures for the SC students in both the categories are only 8 and 3, respectively.

Table 2

PERCENTAGE DISTRIBUTION OF OCCUPATIONAL ASPIRATIONS OF SCHEDULED CASTES AND NON-SCHEDULED CASTES STUDENTS BY K.C.S.

Occupational Aspirations	*Low*			*Middle*			*High*		
	S.C.	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*
1	2	3	4	5	6	7	8	9	10
Low	55	40·98	46	13	21·42	20	33	6·94	9
Middle	31	28·74	29	37	27 27	28	—	18·05	17
High	14	30·27	25	50	51·29	52	67	75	74
Total %	100	100	100	100	100	100	100	100	100
Total No.	277	588	865	8	154	162	3	72	75

$x^2=29{\cdot}91$ $P<{\cdot}001$ df=2 $x^2=5{\cdot}99<{\cdot}05$ df=2 $x^2=3{\cdot}075>{\cdot}05$ df=2

Sl. No. *Columns*
1 2 and 6 : 95·4 df=2; $<{\cdot}01$
2 2 and 9 : 114·9 df=2$<{\cdot}01$

It will be seen from the data that the occupational aspirations of the SC students were significantly lower than those of the non-SC students with low PCS (see columns 2 and 3). This indicates that the low ritual status of the scheduled castes does not motivate for high occupations. A comparison of SC students with low PCS with those of non-SC students with middle and high PCS shows that the occupational aspirations of the former were significantly lower than those of the latter (see columns 2 and 6, 2 and 9). These data suggest that caste influences one's perception both in terms of ritual and class dimensions.

(4) *Caste and Neighbours' Class Status:* An examination of the part (see Table 4) played by caste in influencing the occupational aspirations of the respondents after controlling for the effect of NCS, shows that caste status did not make a difference for the occupational aspirations of the SC and non-SC students, except, to some extent for the low NCS category. That is, the occupational aspirations of the former to some extent were significantly lower than those of the latter in the low NCS category. In the middle and high NCS categories, because of the low proportions of SC students, there were no significant differences in the occupational aspirations of the two groups.

A comparison of the occupational aspirations of the low NCS, SC students with those of the middle and high NCS non-SC students (see columns 2 & 6 and 2 & 9) revealed that the former had lower occupational aspirations than the latter. It clearly shows that the SC students, who mostly stayed in the low status neighbourhoods, had lower occupational aspirations than those non-SC students who, by and large, resided in middle and high status neighbourhoods. It means, caste interacts with neighbourhood status and thus socialises in its members a high/low occupational perception.

Table 3

PERCENTAGE DISTRIBUTION OF OCCUPATIONAL ASPIRATIONS OF SCHEDULED CASTES AND NON-SCHEDULED CASTE STUDENTS BY P.C.S.

Occuptional Aspirations	*Low*			*Middle*			*High*		
	S.C.	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*
1	2	3	4	5	6	7	8	9	10
Low	60	43·92	50	18	18·41	19	17	20·76	20
Middle	30	29·95	30	38	27·36	29	—	18·46	20
High	10	26·11	20	44	54·21	52	83	60·76	60
Total %	100	100	100	100	100	100	100	100	100
Total No.	248	494	742	34	190	224	6	130	136

$x^2=30{\cdot}369<{\cdot}001$ df=2 | $x^2=1{\cdot}747>{\cdot}05$ df=2 | $x^2=1{\cdot}627>{\cdot}05$ df=2

Sl. No.	*Columns*	x^2
1	2 and 6 :	118·7 df=2 $<{\cdot}01$
2	2 and 9 :	115·8 df=2 $<{\cdot}01$

Table 4

PERCENTAGE DISTRIBUTION OF OCCUPATIONAL ASPIRATIONS OF SCHEDULED CASTES AND NON-SCHEDULED CASTES STUDENTS BY N.C.S.

Occupational Aspirations	*Low*			*Middle*			*High*		
	S.C.	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*
1	2	3	4	5	6	7	8	9	10
Low	62	52·29	56	14	27·00	26	40	19·10	20
Middle	29	29·29	30	38	29·94	30	20	18·47	18
High	9	18·92	14	48	43·04	44	40	62·42	62
Total %	100	100	100	100	100	100	100	100	100
Total No.	241	283	524	42	374	416	5	157	162

$x^2=9{\cdot}79<{\cdot}001$ df=2 | $x^2=3{\cdot}371>{\cdot}05$ df=2 | $x^2=1{\cdot}471>{\cdot}05$ df=2

Sl. No.	*Columns*	x^2
1	2 and 6 :	108·4 df=2, $<{\cdot}01$
2	2 and 9 :	133·8 df=2, $<{\cdot}01$

(5) *Caste and Rural-urban Background:* It will be seen from Table 5 that the occupational aspirations of the SC students were lower than those of the non-SC students from the village, town and city. However, the differences in the occupational aspirations of the two groups were significant in the village and city categories but not in the town category. This may be due to the fact that the distribution of the data was due to chance.

Data with regard to the rural respondents show that a majority of the SC students (81 per cent), as against a small per cent (44·62) of the non-SC students, had low occupational aspirations. Simiarly, it was only 10 per cent of SC students, as against 30·64 per cent of non-SC students, and it was only 9 per cent of SC students, as against 24·73 per cent of non-SC students had middle and high occupational aspirations, respectively. Data with regard to the city respondents show that despite a majority of the SC students having come from the city background, their (SCs) occupational aspirations were significantly lower than those of the non-SC students. For instance, while 41 per cent of SC students as against 27·43 per cent of the non-SC students had low occupational aspirations, it was only 22 per cent of the former, as against 47·15 per cent of the latter had high occupational aspirations, respectively. This clearly indicates the differential part played by caste status in motivating the aspirations of the respondents.

A further analysis of the data shows that the occupational aspirations of the rural SC students were significantly lower than those of the town and city non-SC students. This means that low caste status and rural background together restrict the perception of opportunity structure, while high caste status and urban background widen one's perception of opportunities.

Table 5

PERCENTAGE DISTRIBUTION OF OCCUPATIONAL ASPIRATIONS OF SCHEDULED CASTES AND NON-SCHEDULED CASTES STUDENTS BY RURAL-URBAN BACKGROUND

Occupational Aspirations	*Village*			*Town*			*City*		
	S.C.	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*
1	2	3	4	5	6	7	8	9	10
Low	81	44·62	56	49	44·85	46	41	27·43	30
Middle	10	30·64	25	40	30·88	34	37	25·40	28
High	9	24·73	19	11	24·26	20	22	47·15	42
Total %	100	100	100	100	100	100	100	100	100
Total No.	80	186	266	67	136	203	141	492	633

$x^2=30\cdot415<\cdot001$ df=2 $x^2=5\cdot707>\cdot05$ df=2 $x^2=30\cdot257<\cdot001$ df=2

Sl. No.	*Columns*	
1	2 and 6 :	$27\cdot00$ df=2 $<\cdot01$
2	2 and 9 :	$391\cdot8=$df$=2<\cdot01$

(6) *Caste and Social Class Background:* From Table 6 it will be observed that the occupational aspirations of the SC students were significantly higher than those of the non-SC students in the middle and high CICB, categories. In the low CICB category, however, the differences were neither statistically significant nor wide in terms of per-

centages. This was because, of the students, 75 per cent had come from a low CICB, while it was only 25 per cent of the non-SC students who had come from a low CICB. Obviously, the distribution of the data might have been due to chance.

An examination of the data in the middle CICB category shows that 8 per cent of SC students, as against 34·87 per cent of the non-SC students, 51 per cent of SC students, as against 36·29 per cent of the non-SC students and 41 per cent of SC students, as against 28·82 per cent of the non-SC students had low, middle and high occupational aspirations, respectively. A similar trend was observed between SC and non-SC students in the high CICB category.

It becomes evident that a small proportion of SC students with a high social class background tended to have higher occupational aspirations. That is, it was only, the elite scheduled castes students who are making use of the facilities of modern education as an avenue of occupational mobility. However, it should not mean that the differences in the SC and non-SC students have eroded. For instance, a comparison of the occupational aspirations of the SC students with a low CICB and those of the non-SC with a middle and high CICB shows that the occupational aspirations of the former were significantly lower than those of the latter (see columns 2 & 6, and 2 & 9). This shows that the SC students continue to lag behind the non-SC students in their drive for mobility.

Table 6

PERCENTAGE DISTRIBUTION OF OCCUPATIONAL ASPIRATIONS OF SCHEDULED CASTES AND NON-SCHEDULED CASTES STUDENTS BY CICB

Occupational Aspirations	*Low*			*Middle*			*High*		
	S.C.	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*	*S.C.*	*Non-SC*	*Total*
1	2	3	4	5	6	7	8	9	10
Low	69	67·34	68	8	34·87	31	9	16·27	15
Middle	27	24·87	25	51	36·29	39	22	21·00	22
High	4	7·20	7	41	28·82	30	69	62·72	63
Total %	100	100	100	100	100	100	100	100	100
Total No.	216	205	421	49	281	330	23	388	361

$x^2=4\cdot5967<\cdot05$ $x^2=13\cdot94<\cdot001$ $x^2=9\cdot48<\cdot05$

df=2 df=2 df=2

Sl. No.	*Columns*	
1	2 and 6	: $x^2=76\cdot72$ df=2 $<\cdot01$
2	2 and 9	: $x^2=216$, df=2 $<\cdot01$

Summary and Conclusion

The main findings of the paper may be summarised as follows:

The main question that this paper addressed itself to was: To what extent has the caste system in India been adapting itself to the demands of modern education and occupation which are used as strategies to provide equality of opportunty for the SC and ST?

To be specific, the aim of the paper has been to analyse the extent of influence exerted by social background on the occupational aspirations of SC and non-SC students in higher education.

An analysis of the data showed that a small proportion of SC students tended to be more upwardly mobile than non-SC students with a middle and high class status. It means it was more the upper class SC students who tended to have higher occupational ambitions than the lower class SC students on the one hand, and the upper class non-SC students on the other. Further, the data also revealed that the occupational aspirations of the SC students with low class background were significantly lower than those of the non-SC students with a middle and high class status. In other words, except for a small proportion of the upper class SC students, the majority of them who were drawn from low class status continued to lag behind the non-SC students in their occupational aspirations. This indicates that traditional social background—low ritual and class status—is less likely to respond positively to the demands of modernisation viz., the system of elitist education. Indeed, it is the handful of the rich well-educated, urban scheduled castes who are fruitfully utilising the facilities provided by the Government to their advantage.

These data show that lower traditions do not adapt themselves, as Milton Singer (1956) and the Rudolphs (1961) have demonstrated, to the demands of elite models of modernisation (education and occupation). On the contrary, modernisation (education), has to come to terms with the demands of tradition (low caste and class). This means a call for a two-pronged action on the part of the Government: (1) a change in the manner in which the socio-economic facilities to the scheduled castes and tribes are being dispressed now, and (2) a restructuring of the education system so as to suit the needs of low castes and classes. Indeed, there is a great need for research in the sphere of the sociology of education as an instrument of modernisation in India.

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Ambarao T. Uplaonkar

ACCESS TO HIGHER EDUCATION AND EQUALIZATION OF EDUCATIONAL OPPORTUNITIES THROUGH FREESHIPS : A CASE STUDY

How do different sections of the society differ in regard to their access to higher education? How far are the present policies in regard to fees and freestudentships likely to promote the objective of equalization of educational opportunities? Those who are interested in equalization of educational opportunities would like to have an answer to these questions. Towards this purpose a case study of the recipients of freestudentships in the Faculty of Arts of The M.S. University of Baroda for the academic year 1972-73 was made.

The Arts Faculty is typically a poorman's faculty. This is because Arts courses are somewhat less expensive as compared to Medical, Engineering and Science courses. Secondly, the Arts courses require less amount of time on the compus for academic work so that the possibilities of combining of some work with studies are greater in the Arts courses. Students from poorer families who need to combine work with studies are likely to find Arts courses more convenient. Finally those who do not get admission to Commerce, Science or Home Science courses, join the Arts courses. These are typical students who have passed their S.S.C. Examintion with less than 50 per cent marks. Since examination results depend on native ability as well as environmental factors in the family such as its economic and social status, students from weaker sections of the society are likely to suffer from poorer examination results to a greater extent as compared to those coming from the well to do classes. Thus of necessity, in the Art courses the proportion of the students belonging to economically weaker families is likely to be larger than in the other courses. In the subsequent analysis we may be justified in assuming that for the weaker sections the accessibility to higher education as a whole could not be higher than the accessibility to Arts courses in Baroda.

Who are the weaker sections then? The line of demarcation is arbitrary. Here we consider a student as belonging to economically weaker section of the society, if he belongs to a family with income of Rs.4800 or less. In the M.S. University of Baroda, it is easy to identify such students. There are the economically backward class (E.B.C.) free studentships available to the students whose family income is Rs. 2400 or less per annum. The E.B.C. free studentships are awarded by the Gujarat Government. The Faculty Freestudentships are available to the students whose annual family income is Rs. 4800 or less. In exceptional cases this limit is exceeded. The Faculty Freestudentships are awarded by the M.S. University. The University sets aside 15% of the fee collection in each Faculty for the purpose of the award of freestudentships. The Faculty Freeship Committees generally award fractional freeships such as half freeships in order to cover a larger number of students. Thus the number of recipients of the fresship exceeds 15% of the total enrolment. Almost every one who satisfies the income criteria and the academic merit criteria gets some financial aid.

The academic merit criteria is fairly simple. The Government E.B.C. freeship is awarded to those who have passed the last examination. Those who have not passed in all the

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subjects but are nevertheless promoted, that is the A.T.K.T. (Allowed to keep terms) students are not eligible for the E.B.C. freeship. However, the Arts Faculty Fresship is available to those who have failed in one subject in the previous examination. Due to this, the merit criteria does not reject any one in F.Y.B.A., S.Y.B.A., and M.A. Part-I from the award of freeship who is otherwise eligible on the basis of the means criteria. This is because only those who have fully passed Preparatory Arts are promoted to F.Y.B.A.; those who have A.T.K.T. in only one subject at F.Y.B.A. are promoted to S.Y.B.A. and only those who have passed the B.A. degree examination are admitted to M.A. Part-I. The criteria of promotion and the criteria of the award of freeship do not conflict with each other in these cases. Only in T.Y.B.A. class and M.A. Part-II class, there is a chance of some of the students belonging to economically weaker sections being rejected freeship on the ground that they may have failed in more than one subject in the previous examination. This is because the promotion from S.Y.B.A. Class to T.Y.B.A. Class and that from M.A. Part-I to M.A. Part-II is automatic and not coditional upon passing the respective exams in part or full. The point is that our considering the recipients of the EBC freeships and the Faculty Freeships for investigation would give us a fairly comprehensive coverage of the students belonging to economically weaker sections in the Arts Faculty.

The sources of information were the forms filled up by the students applying for E.B.C. freestudentship and the Faculty freestudentship plus the schedules specially canvassed among the applicants for the Faculty freestudentship. The study does not cover the Scheduled castes and the Scheduled Tribes students who numbered 40 during the year under consideration. The year of reference is 1972-73.

·A word about the reliability of the family income data. As stated earlier we consider the families with annual income of Rs.4,800 or less as being an economically weak position. We had no means of checking this except the income certificate produced by the applicant and the personal interview with the applicant. It is our feeling that incomes from farming and business and by the self-employed classes are considerably understated. Among the students coming from the salaried and wage-earning classes, the understatement occurs through the suppression of the information regarding the incomes of other earning members in the family besides the father, such as the earnings of brothers or sisters. Income from rent, interest, diivdends and casual and incidental or seasonal earnings are not generally stated. Thus we can say that the family incomes are understated. That is to say some of the recipients of the E.B.C. and the Faculty Freeships would be really belonging to income groups higher than Rs. 4,800. The access that economically weaker sections have to higher education would be in reality less than that indicated by the number of recipients of freeships.

With this preliminary, we proceed to an analysis of our data. Table I shows the total number of students enrolled and the number of aided students in the Faculty of Arts, The M.S. University of Baroda during 1972-73. The most remarkable phenomenon brought out by the table is the very low percentage of the students belonging to the economically weaker section of the population. Out of a total of 2,106 students in the Faculty of Arts, only 543 or 25·8% of the students belonged to the families with income of Rs. 4,800 or less. (Actually 13 students had family income exceeding Rs. 4,800 but they are included in the figure of 543 mentioned above). Considering the fact that almost every one eligible for a fee concession applies for the freeship and also gets it, we can say that on their own admission, 75% of the Faculty of Arts students really belonged to the families earning more than Rs. 4,800 per year. Another significant fact brought out by the table is that about 1/3rd of the men students and only 1/5th of the women students were aided. Among the recipients of the economically backward class freeship the discrepancy is particularly large. This means that the poorer families are not able to afford or do not desire higher education for their daughters.

Next we consider the economic background of the aid recipient students. Here we consider the family income, per capita income and occupation of the father. Tables 2, 3 and 4 show the relevant data. Before proceeding further let us recall that we have taken the family income of Rs. 4,800 as the line of demarcation for the students coming from economically weaker sections. It was stated that this line is arbitrary and is dictated by the fact that the freeship aids in the M.S. University are available to the students coming from families with annual incomes of less than Rs. 4,800. However, as we shall just see, this also happens to coincide with other relevant lines of demarcation.

Table 1

NUMBER OF STUDENTS ENROLLED AND THE NUMBER OF AIDED STUDENTS IN THE FACULTY OF ARTS, THE M.S. UNIVERSITY OF BARODA : 1972-73.

	Men	*Women*	*Total*
Total Number of Students Enrolled	1068	1038	2106
Students getting the Faculty Freeship	241	162	403
Students getting E.B.C. Freeship	105	35	140
Total Number of Aided students	346	197	543
Percentage of Aided students to total enrolled students	32·4	19·0	25·8

In the first place, the per capita income in India in the year 1972-73 was Rs. 681. at current prices. The line we have drawn for demarcation is Rs. 4,800 family income, In Gujarat, according to the 1971 Census the average size of households was 5·75 persons[1]. Thus the annual per capita income of the families with Rs. 4,800 family income. would be Rs. 835. Thus our line of demarcation is somewhat above the national per capita income.

Let us go a step forward into the matter. From Table 3 we find that most of the aided students belonged to the families which had per capita incomes of less than Rs. 900 per annum or Rs. 75 per month, in 1972-73. On the basis cf the publications of the Planning Commission, we calculate that in the urban areas of India in 1973-74, the per capita consumption per month of the top third decile group was Rs. 78. Since the consumer price level in 1973-74 was about 21% higher as compared to 1972-73, this may be taken as equivalent to Rs. 63 at 1972-73 prices. If the average per capita monthly consumption is taken to be Rs. 63 for the top 21 to 30% of the urban population, their per capita monthly income may be put at a higher figure of say, Rs. 70. This is the average for the whole decile group. Since our line of demarcation for freeship holders more or less cuts at per capita monthly income of Rs. 75, broadly we may say that those who come from families with per capita incomes above Rs. 75 per month belong to the top quartile families. Other belong to the second. third and the fourth quartile.

We can now measure the access to higher education in terms of chances of getting higher education for those coming from better off families and for those coming from economically weaker families. We have estimated that the families with per capita income Rs. 75 or more per month generally constitute 25% of urban areas in India and we assume that more or less the same is true for the urban areas of Baroda district. However, we find that 3/4th of the students in the Arts Faculty belong to the families whose monthly per capita incomes exceed Rs. 75. The tabular presentation below makes the contrast more vivid.

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1. *Census of India* 1971—*Series 5—Gujarat—Pocketbook of Population Statistics*, Directorate of Census Operations, Gujarat, Ahmedabad, p. 66.
2. See, *A Technical Note on the Approach to the Fifth Plan of India*, 1974-79 Planning Commission, April, 1973, p. 21.

Per capita Monthly Income	*Percentage of Families in Urban Areas of Baroda district.*	*Percentage of students in Arts Faculty*	*Column 3+2*
Rs. 75 or more	25%	75%	3
Less than Rs. 75	75%	25%	1/3

We thus find that the better off families have 9 times as much chance of sending their children for higher education as compared to families which may be considered to be in weaker financial position. In reality the discrepancy is likely to be much wider in as much as the incomes of the freeship recipient students are known to be significant understatements.

Table 2

FAMILY INCOME OF AIDED STUDENTS IN THE FACULTY OF ARTS, THE M.S. UNIVERSITY OF BARODA, 1972-73.

Family Income (Rs. per year)	*Total Number of Aided Students*		
	Men	*Women*	*Total*
Rs. 1 to 2399	166	74	240
Rs. 2400 to 3599	115	71	186
Rs. 3600 to 4799	42	34	76
Rs. 4800 and above	6	7	13
Living on Property, help charity etc. and others	17	11	28
Total	346	197	543

Table 3

PER CAPITA INCOME OF AIDED STUDENTS IN THE FACULTY OF ARTS, THE M.S. UNIVERSITY OF BARODA, 1972-73.

Per capita income (Rs. per year)	*Total number of aided students*		
	Men	*Women*	*Total*
Rs. 1 to 299	110	41	151
Rs. 300 to 599	140	78	218
Rs. 600 to 899	58	51	109
Rs. 900 to 1200	7	4	11
Rs. 1200 and above	7	4	11
Living on Property, help, charity etc. and others.	24	19	43
Total	346	197	543

Table 4

AIDED STUDENTS IN THE FACULTY OF ARTS, THE M.S. UNIVERSITY OF BARODA, ACCORDING TO THEIR FATHER'S OCCUPATION, 1972-73.

Father's Occupation	*Total number of Aided Students*		
	Men	*Women*	*Total*
Farming	64	9	73
Factory workers, class IV Office Workers etc.	85	34	119
Independent Artisan, Craftsmen	27	14	41
Petty Business	12	8	20
Clerks, Teacher etc.	78	80	158
Shop-keeping	27	17	44
Officers Professionals etc.	23	26	49
Inadequate Information	30	9	39
Total	346	197	543

(In case of 17 persons the occupations, refer not to Father's Occupation but to the occupation of the eldest member.)

It can be seen from Table 3 that as the per capita income increases, the ratio of women students also increases. Thus the number of freeship receiving women students per 100 freeship receiving men students increases from 37 for the per capita income group Rs. 1 to Rs. 299 to 56 for the per capita income group Rs. 300 to Rs. 599 and 88 for the per capita income group Rs. 600 to Rs. 899. This is in keeping with the expectations. The probability of the girls going to college from among the lower income groups is even less than that of the boys from the same income groups. However, if we look at Table IV, we find significant differences in regard to Manual classes and Non-Manual classes. Farmers, factory workers, Class IV Office workers, independent artisans, craftsmen and those in petty business are included in manual class, while clerks, shop-keeper and officers and professionals are included in Non-manual classes. The number of students receiving freeships who belonged to the two classes are shown below:

	Aided Students			*Women per* 100
	Men	*Women*	*Total*	*men*
Manual classes	188	65	253	35
Non-Manual classes	128	123	251	96

It can be seen that the manual and non-manual classes differ significantly in regard to education of women. It is of course possible that Non-manual classes generally belong to higher per capita income groups. But at the same time not all the manual classes would belong to the lowest per capita income group. What we however find is that the number of women students per 100 men students among manual classes is 35 which is even lower than what is found in case of the lowest per capita income group.

From this we can derive an interesting hypothesis, namely that the manual and non-manual classes differ significantly in their propensity to take education. Given the same income, and the same fees, non-manual classes would send a larger number of children to colleges. This would imply that the indifference curves showing goods and education on the two axis for the non-manual classes are steeper and those for the manual classes are flatter. If that is so, a policy of charging lower fees and fee concessions, is largely a policy of reliefs for the non-manual classes, with only a limited role of equalization of educational opportunities for the manual classes.

V.N. Kothari, M.M. Dadi and B. B. Patel

DISTRIBUTION OF HIGHER EDUCATION SUBSIDIES: A CASE STUDY OF PUNJAB UNIVERSITY*

Most of the public finance operations which are growing over the years can be viewed as a series of transfers of purchasing power (measured in terms of income) among individuals or groups of individuals (Windham [14, P. 1]). The short-run benefits and costs of all publicly financed goods and services may be distributed unequally among socio-economic classes, the net benefits of which may accrue to higher or lower socio-economic groups depending on the nature and size of the public good (Moore [8, pp. 485-86]). Subsidised higher education, like any other public good, creates certain distributional changes which are often used as a justification for public investment. This is because it is often believed that these transfers tend to enhance the equality of educational opportunity and reduce the disparities in the distribution of income (Windham [14, p. 1], Woodhall [15, p. 15]).

Public support of higher education as an instrument of 'income redistributor' in favour of the low-income groups has been questioned in recent years. Most of the studies on this subject have criticised the financing of higher education through public funds because of the disproportionately large representation of upper income groups in the higher education system (Honsen and Weisbrod [3], Jallade [5, 6], Windham [14]). A few studies, on the other hand, have supported subsidization of higher education because of the redistributive nature of public higher education in favour of low-income groups (Moore [8], Penchman[9]). There is scanty literature in India as regards the redistributive impact of public higher education is concerned. Like many other public goods, public support to higher education in India is increasing over the years.

The object of this paper is to estimate the distribution of subsidies among different socio-economic groups in India with a case study of 'Punjab University' for which data, though limited, is available.

Sources of Data

Since the purpose of study is to estimate the distribution of subsidies on higher education, we need the data on (i) public expenditure on higher education, and (ii) socio-economic background of student community. Data on these items are available for Punjab University for the academic year 1973-74.

Annual Reports of Punjab University, 1973 and 1974, (10, 11 provide data on expenditure by items and income by sources for the year 1973-74. They also provide the data on enrolment for every department at each level of teaching. The enrolment and other particulars related to it can also be obtained from the 'Third All-India Educational Survey-Higher Education (UGC[13]). The data on socio-economic background of the Punjab University students is available for the year 1973-74 from a survey conducted by Sharma to assess the modernizing effects of University education (Sharma [12]). It provides data on socio-economic variables like father's income, education, occupation etc. of the Punjab University students. So we have used this data in our study restricted to Punjab University teaching departments.

Methodology

Punjab University consists of 40 teaching departments, constituent colleges, affiliated colleges and Directorate of correspondence courses. The total enrolment as on 30th September 1973 was 1,48,733 out of which 5696 belong to 40 teaching departments of the University. These departments consist of both professional and general education departments that teach both at undergraduate and postgraduate levels. 34 out of 40 teaching departments constitute the sample space of Sharma's study (Sharma [12]). A sample of 770 out of 5696 (nearly 14 percent) was sected covering all faculities and all levels-undergraduate and postgraduate[1]. The sample selected was fairly large and can represent students of all university teaching departments because it was a random sample based on faculty and level of education as startified variables[2]. So the probability of a student selected belongs to a particular socio-economic group is the same for each student. The socio-economic characteristics of sample students were assumed to be reflecting the socio-economic background of all studnets of Punjab University teaching departments. The socio-economic variables given are :

(i) Income of the father (ii) Occupational status of the father (iii) Caste of the family (iv) Education level of the father and (v) Rural/Urban background of the students (Sharma [12])[3].

During the academic year 1973-74 Punjab University had incurred an expenditure of Rs. 382-32 lakhs, exceeding its income by 7·18 lakhs[4]. The expenditure of Punjab University include expenditure on constituent colleges and regional centres. The expenditure incurred on these colleges and centres was quite significant and was deducted from total expenditure so as to get the net expenditure incurred on university teaching departments. This has been done because, as explained earlier, the socio-economic characteristics were available for the students of Punjab University teaching departments only.

Table 1

PLAN AND NON-PLAN EXPENDITURE ON PUNJAB UNIVERSITY 1973-74

(*Rs. Lakhs*)

	Total Exp.	*Exp. incurred on P.U. campus*	*Exp. Financed from public funds*	*Allocable public subsidies on P.U. Teaching departments*
Non-Plan	297·58	230·43	103·37	103·37
Plan	49·11	47·99	47·99	12·74
Other Schemes	35·63	28·50	28·50	14·25
Total	382·32	306·92	179·86	130·36

Source : Calculated from the Expenditure and Income figures given in Annual Report, 1974.

The expenditure incurred on Punjab University departments works out to be Rs. 306·92 lakhs which is more than 80 per cent of total expenditure of Punjab University (See Table 1).

Like many other Universities, Punjab University depends, mainly, on public funds for its expenses. The public funds include grants from state governments of Punjab and Haryana, Union Territory of Chandigarh and the University Grants Commission[5]. The other sources of finance were collection of fees, sale of publications, etc. Nearly 59 per cent of expenditure on Punjab University teaching departments was financed from public funds. More than 75 per cent of this expenditure was recurring expenditure. Non-recurring expenditure that constitute 25 per cent of total expenditure benefit the students over a period of time. For example, items like books, buildings and euipment can last for many years and hence only a part of expenditure on these items benefit the students in a particular year. The rate of depreciation is a very disputed item and there is no definite data on the life expentancy of different items entered in non-recurring account. We assumed 5 per cent depreciation for land and building and 10 per cent for books, furniture and equipment. The same figures were used in the estimation of educational costs (Dey [2, p. 20]).

The public expenditure on Punjab University campus in 1973-74 was Rs. 179·86 lakhs of which Rs. 130·36 lakhs were allocable expenditure. The remaining amount of Rs. 49·50 lakhs were assumed to have not benefited the students during the academic year 1973-74. The allocable public expenditure of Rs. 130·36 lakhs, which is more than 72 per cent of the public expenditure on Punjab University teaching departments was distributed among the students with varying socio-economic background.

Distribution of Subsidies

The average subsidy per student of Punjab University teaching departments was Rs. 2289, which is many times more than per student subsidy at school education[6]. Subsidy per student varies from faculty to faculty and stage to stage within a faculty. As there was no detailed figures available, no attempt has been made to estimate these differences. The subsidy in higher education system benefits, mainly, those who participate in it as students.

In Table 2, we presented the distribution of subsidies by father's income and occupation of Punjab University departments' students. Students are classified into three groups: Low, Middle and High based on father's income and occupational status. Income below Rs. 400 per month is classified as low-income group and above Rs. 1500 per month classified as high-income group. Similarly, occupational status is also classified into low, middle and high based on the type of occupation of student's father.[7]

Table 2

DISTRIBUTION OF SUBSIDIES BY FATHER'S INCOME AND OCCUPATIONAL STATUS OF PUNJAB UNIVERSITY TEACHING DEPARTMENTS STUDENTS—1973-74 (IN RS.)

Monthly Income of Father (Rs.)	*Occupational Status of Father*			
	Low	*Middle*	*High*	*Total*
Below 400	7,86,950	11,29,102	1,02,646	20,18,698 (15·5)
401—1500	13,34,394	44,65,086	30,96,478	88,95,957 (68·3)
1501 and above	68,430	8,89,595	11,63,317	21,21,343 (16·3)
Total	21,89,774 (16·8)	64,83,784 (49·7)	43,62,441 (33·5)	1,30,36,000 (100·00)

Note: (*a*) *Figures in parenthesis denote percentage to total.*
(*b*) *Total may not tally due to rounding off.*

From Table 2 one can see the high flow of public funds to economically and socially better off sections. As much as 69 percent subsidies were appropriated by middle-income (Rs. 401-1500) groups. Both low-income (Rs. 400) and higher-income (Above Rs. 1500) groups are getting less than half of what middle-income groups were getting. Simiarly, middle occupational status groups were getting nearly 50 per cent of the total subsidies; out of remaining Rs. 65·5 lakhs, more than 66 per cent of subsidies were going to groups with higher-occupational status. Both low income and low-occupational groups were claiming less than other groups. Within a given occupational status group, it is the middle income group that is benefiting the most.

The distribution of subsidies by father's income and educational status is presented in Table 3 to know how the public higher edcation is benefiting the families with a given income and education of the father. Educational status is classified into four groups: Viz., illiterate, literate below matric, matric but below graduate and graduate and above.

Table 3

DISTRIBUTION OF SUBSIDIES BY FATHER'S INCOME AND EDUCATION OF PUNJAB UNIVERSITY TEACHING DEPARTMENTS STUDENTS—1973-74 (IN RS.)

Monthly Income of Father (Rs.)	*Educational Status of Father*				*Total*
	Illiterate	*Literate below matric*	*Matric below graduation*	*Graduation and above*	
Below 400 (below)	3,74,891	6,30,499	8,17,944	1,87,445	20,10,781 (15·4)
401—1500 (Middle)	3,91,932	9,20,188	25,56,078	50,09,913	88,78,112 (68·1)
1500 and above (High)	85,203	1,70,404	6,47,540	12,43,958	21,47,105 (16·5)
All	8,52,026 (6·5)	17,21,092 (3·2)	40,21,563 (30·9)	64,41,317 (49·4)	1,30,36,00 (100·00)

Note: (*a*) *Figures in parenthesis denote percentage to total.*
(*b*) *Totals may not tally due to rounding off.*

The subsidies on Punjab University were benefiting those whose first generation was well educated. From the Table 3 it can be seen that nearly 50 per cent of them were accrued to those families of graduated fathers. The share of families with illiterate fathers was only 6·5 per cent of the total subsidies. Within a given literacy group (except in illiterate group), it is the middle-income group which is benefiting the most. For example, within the group of literates below matric more than 50 per cent was shared by middle-income groups. Interesting thing that we can note is the direct relation between educational status of fathers and the share in subsidies. The percentage share of subsidies rise with an increase in the literacy level of father. The Punjab University education system benefited those families who had already participated in subsidised higher education. Few illiterate families send their children for higher education and hence benefit less from higher education subsidies.

The distribution of subsidies by the caste of the Punjab University students is given in Table 4. The castes are grouped into three on the basis of their relative status in the society. These groups are (1) low-status castes consisting of scheduled castes, scheduled tribes and other low castes (ii) middle status castes which include all intermediary castes and (iii) high status castes comprised of all other forward castes[8].

Table 4

DISTRIBUTION OF SUBSIDIES BY FAMILY CASTE OF PUNJAB UNIVERSITY TEACHING DEPARTMENTS STUDENTS—1973-74

Caste	*Subsidy (in Rs.)*	*%age of subsidy*
High	69,75,106	53·5
Middle	51,80,540	39·7
Low	8,80,353	6·8
All Groups	1,30,36,000	100·00

From the above Table it can be seen that more than 53 per cent of the subsidy is going to the high caste groups where as the share for the low-caste groups is less than 7 per cent. This shows the domination of high caste groups in higher educational institutions.

It is interesting and important to note that less than 30 per cent of the subsidies were appropriated by traditional occupational groups where as these people represent nearly 70 per cent of the working labour force. Families with modern occupations and high educational status were having large representation in Punjab University teaching departments student community in the year 1973-74.

From the Tables 2, 3 and 4 one can see how the public higher education funds of Punjab University were appropriated by well-to-do sections—in whatever terms we measure the socio-economic status. Whether this holds true for all-India Higher Education System is difficult to say in the absence of adequate data. But one could expect more representation from the better-off sections in institutions of Higher learning mainly for three reasons: Firstly, for a poor family the incidence of burden in sending a child for higher studies is more than that for a rich family. The cost of imparting higher education is quite high and so the relative burden for poor family would be more than for a rich family in paying these costs. Secondly, the opportunity cost of sending a child to higher studies would be more for a poor family than for a rich one. The poor children above certain age can contribute some thing to their family income, if they work, instead of attending a college. And lastly, due to the growing incidence of educated unemployment, poor families hesitate to send their children for higher studies. In job market, which is becoming more competitive, it is the better-off sections who can secure jobs more easily because of their influence and better-educational background. Due to paucity of data, no attempt has been made to estimate the impact of public higher education subsidies on income distribution. However, we can say that public higher education subsidies tend to increase the inequality in the distribution of income in the short run. The impact would be neutral only if the per capita subsidy available is the same for all income groups. But this is not the case. If we take the per capita subsidy of higher education for the age-group 17 to 23 years, the subsidy would be less for the low-socio-economic group compared to subsidy available to the other groups. This is because very few children from the poor families in this age-group go for higher education. From the rich families more children in the age-group 17 to 23 years enroll in higher education. So the subsidised higher education in India is, indirectly, contributing towards inequality in the short run. Even if we assume that all subsidies in the form of scholarships, fee concessions, etc. are going to low-socio-economic groups, there would be no significant improvement in the per capita subsidy available to these groups because of the insignificant amount of these subsidies associated with high proportion of youth in this age-group from poor families outside the higher education system.

Who is financing public expenditure on higher education in India is difficult to estimate as there were no special taxes levied to finance educational expenditure. If we take all taxes into account, the poor families would be paying more than what they receive in the form of public higher education subsidies because of the regressive nature of indirect taxation which is contributing more to the exchequer.

Long-run implications and some policy issues

That education provides individuals with extra earning power and enables them to move up in the social ladder, is hardly disputable (Hultin and Jallade [4, p. 14]). There is a positive correlation between years of schooling and the income earned. Individuals with higher education can be absorbed in highly paid jobs. Public higher education benefit only those who were enrolled in institutions of higher education and since the better-off sections are represented disproportionately in large number, they could be placed in better-paid jobs. So, in the long-run, the disparities in incomes would not reduce on account of public higher education. Instead, there may be possibility of rise in disparities in long-run . This is not only because of less representation from poor families in higher education but also because, as we have said, for a given level of education, a person from rich family can find job easily than a person from poor family. And it is also possible that those from high status family can get a better-paid job than their counter-parts with poor family background.

From the study, it can be said that present system of subsidies to higher education are favouring the well-to-do sections of the society. Unless the system of financing of higher education is changed one can not expect any improvement in the distribution of subsidies. Public higher education can be used as an instrument for achieving equality if the poor represent disproportionately more than rich in these institutions.

Through more direct assistance in the form of scholarships and other financial assistance to all poor students, the government can encourage the poor families to send their children for higher studies.

Footnotes

*The author is grateful to D.N. Rao for his valuable suggestions and comments on the earlier draft of this paper.

1. Sampling frame work of Sharma's study comprised of 3,437 students on the rolls of the day classes of 34 departments. But, the total enrolment of 40 teaching departments including research students was 5,698.
2. The distribution of student population and sample size is :

Stratum	*Population*	*Actual sample size in terms of completed interviews*
Humanities	525	128
Social Sciences	693	130
Science Undergraduate	606	143
Science Postgraduate	422	116
Professional Undergraduate	336	106
Professional Postgraduate (include LL.B., B. Lib. and B.J.)	909	147
Total	3437	770

Source: Sharma (12, *Table II*·1, *p.* 29).

3. The tables are not reproduced here as they need more space. Details can be seen in Sharma (12), Tables II-2, II·3, II·4 and VIII 12.
4. This deficit of Rs. 7·18 lakhs was assumed to be financed from public funds.
5. For details regarding sources of income and expenditure by item, see Punjab University Annual Report, 1974 (II Table III) (xi), pp. 319-322.
6. The terms subsidy and public expenditure are used interchangeably.
7. For the classification of occupations into various status groups, see Sharma (12), p. 31.
8. High caste group include castes like Brahmin, Rajput, Thakur, Arora, Khatri, etc. Middle Group consists of Jat, Aggarwal, Baniya etc. and the low-group consists of Harijan castes etc. see Sharma (12, p. 31).

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B. Shiva Reddy

PROFITABILITY OF PRIVATE INVESTMENT IN HIGHER EDUCATION IN RAJASTHAN

The cost of education and money returns resulting from investment in education are currently receiving more and more attention by Economists because of their possible implication for economic growth and the help rendered to individual to determine how much they should invest to develop their own human capital. Estimates of the private rate of return are intended to measure how profitable it is for the individual to spend money on his own education. In the developing and developed country alike students and their families are usually well aware of the vocational advantages of higher education but the desire for a better job, and higher life time income is frequently an important factor influencing educational choices. When students make their decisions it is on the basis of fairly rough estimates of likely benefits compared with costs. Calculations of private rate of return show more accurately, and in greater detail, what the balance is between financial loss in the present and financial gain in the future.

Therefore, in the present paper an attempt has been made to answer the following questions :

(i) Has the large scale expansions of higher education in Rajasthan conferred enhanced life time monetary earnings upon the large numbers of students that have undertaken higher education?
(ii) If so, have these earnings been sufficiently high to offset any costs that students have incurred? In other words, what on average has been the rate of return on private investment in higher education.
(iii) Has there any inequality in earnings and rate of return of higher educated persons (by sex male versus female).

The Data Basis

The paper is based mainly on the private costs and benefits data collected through a sample survey conducted by the researcher himself in connection with his Ph.D. thesis[1]. The survey covered 10 per cent of the total graduate and cost graduate students who passed their final examinations in 1971 from the colleges located in Jaipur city.

Education and Earnings

To study some crucial feature of the relationship between education and earnings, the computed age-education—earning profiles are plotted on graph paper. The most obvious features shown in figure-1 are the consistent rise in earnings with age and the close association of mean earnings with qualification. The profiles of higher education lie above the lower ones and the earning differentials increase with age; persons with postgraduate qualification tend to earn more on average than graduates, who in turn earn more than those with matriculate qualification[2].

A comparison between males and females indicate that the earning of females are lower than that of males at each level of educational qualification i.e. graduate and post graduate (see figures-2 and 3). The main reason of lower earning of females is that large number of female drop out of the labour force while they are engaged in child care. Statistics on the labour force participation rate of females also show that there is an almost universal tendency for the labour force participation rate of married females to fall during child caring and rearing years[3].

Private Cost of Higher Education

The private cost of higher education defined as the cost incurred by the pupil or by his parents during the course of study. It is a sum-total of Direct private cost and Indirect private cost. The former is defined as the expenditure on books, stationery, fees, additional clothing and entertainment etc., and latter refers to the income which an individual student forgoes in order to continue his education. The computed figures are given in Table 1.

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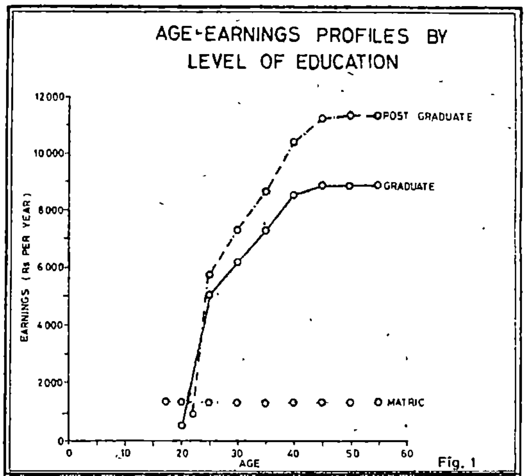
AGE-EARNINGS PROFILES BY LEVEL OF EDUCATION

Fig. 1

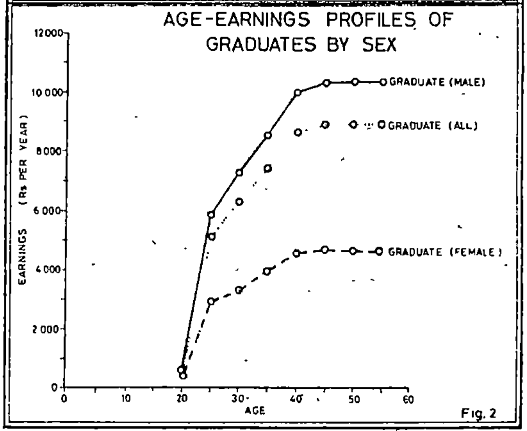
AGE-EARNINGS PROFILES OF GRADUATES BY SEX

Fig. 2

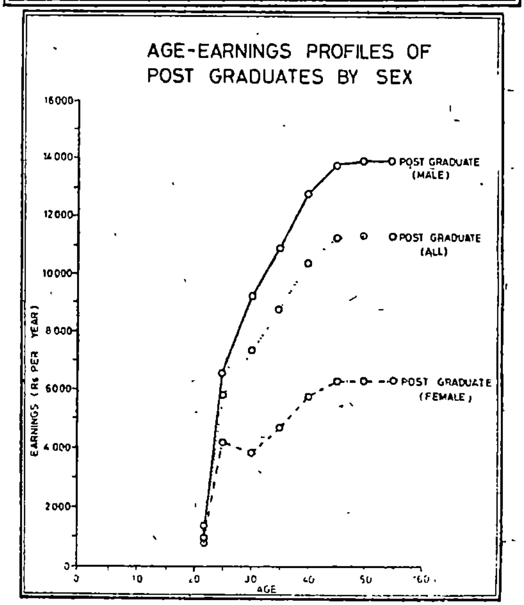
AGE-EARNINGS PROFILES OF POST GRADUATES BY SEX

Fig 3

Table 1

UNIT PRIVATE COST OF HIGHER EDUCATION

(*in Rs. per course*)

Level of qualification and sex	*Direct Private Cost*	*Opportunity Cost*	*Total Private Cost*
Graduate			
(i) Male	2,660	4,158	6,818
(ii) Female	2,212	4,158	6,370
Postgraduate			
(i) Male	3,235	1,878	5,113
(ii) Female	2,371	1,033	3,404

The cost data indicate that the difference in Unit private cost of graduation and post graduation is largely explained in terms of opportunity cost per student. While the difference in Unit private cost of higher education in between sex i.e. male and female is due to the difference in fees alongwith the opportunity cost.

Private Rate of Return

The general procedure for calculating the rate of returns to an investment is to find that rate of discount which sets the discounted value of the time stream of its costs equal to that of the time stream of benefits accruing to it. In this paper, the calculated rates of return are marginal in respect to amounts of education but average with respect to the cohort. Therefore, in calculating net present value of benefits, the earnings of lower educated person have been deducted from higher educated persons. The resultant gives the earning differential of that particular level of qualification. In addition to it, since the individual will be interested in his disposable rather than pre-tax income. Therefore, in calculating the private rate of return net tax-earnings have been used.

The mathematical formula is as follows:

$$\sum_{t=-(q-1)}^{o} \frac{(C_h+W_s)_t}{(1+r)^t} = \sum_{t=1}^{n} \frac{(W_h-W_s)_t}{(1+r)^t}$$

Where

C_h is the sum of direct outlay which has been made by an average student.

W_s is the earning of less educated persons which are also the forgone earnings for higher educated persons (opportunity cost).

W_h	Earning of higher educated person
q	is the years of course study
n	is the working life
r	is the internal rate of return
t	is the time period.

The rate of return derived in this way are presented in Table 2.

Table 2

MARGINAL PRIVATE RATES OF RETURN ON EDUCATION

(*Percentages*)

Level of qualification	*Male*	*Female*
Graduate	25·7	14·6
Postgraduate	15·6	12·8

Conclusions

The following conclusions emerge from our analysis :

(i) There is a positive relationship between education and earnings. The average earning of postgraduate persons is higher than graduate persons.

(ii) Investment in graduate education offers high rate of return to the individual and in higher degree, if the possibility of dropping out is not taken into account.

(iii) The rate of return tends to decrease with the successive level of qualification i.e. the rate of return to graduate education is higher than the rate of return to postgraduate education. The difference in rate of return to graduate and postgraduate education is 11·6 percentage points for all persons 10·1 percentage points males and 1·8 percentage points for females.

(iv) The returns to females higher education are less than the returns to males higher education that means females higher education is relatively less profitable or unprofitable as compared to males higher education (in economic sense). This can be explained by the fact that many of the girls do not get education for the earning purposes at all and many others leave jobs after getting married we have found that 50 per cent of post graduate girls and 66·60 per cent of graduate girls have either not taken job at all or left the job after marriage. Therefore, there is an urgent need to increase the rate of participation in the labour force among females so that the scarce resources can be utilised better.

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G. K. Bhatt

CORRELATION BETWEEN STUDENTS' SCORES IN A DRAMA COURSE AND THEIR ASSESSMENTS OF THEIR TEACHER AND AVAILABLE RESOURCES IN IBADAN, NIGERIA

The Education Drama Methods Course (formerly EDU 323, now TEE 323) is taught in the Department of Teacher Education, University of Ibadan. The course is designed to prepare prospective teachers for drama teaching at the primary, secondary and university levels. The course is also meant to prepare interested students for adult theatre in the future[1]. Thus, emphasis is put not only on the content, but also on the principles and methods of teaching the course.

Resource person, literature (textbooks, journals, bulletins and mimeographed handouts), audiovisual aids (firm slides, flash cards, etc.), historical playlets and places are all as important as the teacher[2] in accomplishing the objectives of the Drama Course. Thus, the availability of these resources is one of the important indicators in determining whether or not the course is learnt thoroughly by the students.

It is one thing for the course to be made available to the students; it is another thing for the teacher to be competent enough to teach the course to the satisfaction of the students. Being a sound teacher in a course does not guarantee that students will learn the course as thoroughly as expected. The teacher's mode of presentation and rapport with the students count a great deal[3]. Some teachers are born, yet, a lot of them are made. Therefore, a training programme is not enough to professionlise a teacher. An honest and regular self-appraised and an effort to improve upon ones own performance can contribute a great deal to the professional development of any teacher[4]. The present study was carried out with this principle in mind.

On the one hand, the study aims at showing the students' performance as measured by their scores in the Drama Course taught by the researcher. On the other hand, the study shows students' views of their teachers (researcher's) personality, tasks (design of outline and content and method of presentation) and resources used in the Drama Course. Moreover, the students were to express their views on the impact that the Drama Course has on them. Correlation between the students' academic performance and their ratings of their teacher can hopefully provide information that can contribute to the professional development of the teacher

Methodology

The Data: There were forty (40) students in course EDU 323 (Drama Methods) in 1977/78 session. They were all served with evaluative questionnaires, since they constituted a small sample. Thus, no random sampling was drawn. Immediately after their final examination in the course, they were requested to fill the questionnaire as honestly as they could. In addition, they were told not to put their names on the questionnaire, except their matriculation numbers. Their examination scores and questionnaire responses were recorded against their matriculation numbers.

The Research Instrument: This is labelled "Course Evaluation". Each student responded on a five-point scale worded excellent (5), good (4), average (3), below average (1-2). Using these ratings, students evaluated the course outline, content, resources methodology and the impact the course has on them. The students gave reason(s) for each rating made. They were all given a week to fill and return the questionnaire.

Data Analysis: Students' ratings in the questionnaires and their scores were tabulated and coded. They were computerised for frequency counts and for Pearson Correlation coefficients in order to show the degree of correlation between students' assessment of their teacher and available resources and their scores in the Course EDU 323. The t-test statistics was used to determine the significance of the obtained results[5]. The level of significance required was ·05.

The Questions: The major questions in this study are :

1. How well did the students perform in the Drama Methods Course (EDU 323)?
2. How did the students rate their teacher's course outline, content, methodology, resources and impact?
3. To what degree did students' scores correlate with their ratings?
4. To what degree did the students' impact rating correlated with their course rating?

Findings

Question 1: How well did the students perform in the Drama Methods Course (EDU 323)? Table 1 provides necessary figures for answering the question.

Table 1

DISTRIBUTION OF RESPONDING STUDENTS BY THEIR SCORES IN COURSE EDU 323 (NOW TEE 323) (DRAMA METHODS), 1977/78

Number of Items	*Marks Scored*	*Frequency of Students*	*Percentage Frequency*
0	1	2	2
1	70	13	37·0
2	68	10	28·6
3	67	4	11·4
4	66	3	8·6
5	65	1	2·9
6	64	2	5·7
7	63	1	2·9
8	56	1	2·9
Total		35	100·0

Mean Score=67·54; *Standard Deviation*=2·89; *Pass Mark*=40·0; *A Grade*=70·0 *and above* (*Excellent*); *B Grade* =60-69 (*Very Good*); *C Grade*=50-59 (*Good*); *D Grade*= 40-49 (*Satisfactory*); *E Grade=below* 40·00 (*Poor*).

Table 1 shows that all the responding students passed the Course with the grade score of 56·0 per cent and above. Over one-third (37·0 per cent) performed excellently well with a grade score of 70·0 per cent; over one half (60·1 per cent) performed very well with grade scores ranging from 63 per cent to 68 per cent; while less than one-fifth (2·9 per cent) of the responding students did a good work with a grade score of 56·0 per cent. The responding students as a body did a very good job with a mean score of 67·5 per cent.

No doubt, good teachers preparation, and teaching and availability of resources might have contributed to the performance of the responding students in the course. This point is examined in the subsequent questions.

Question 2: How did the responding students rate their teacher's course outline, content, methodology, resources and the impact that the course has on them? Table 2 provides necessary data for answering the question.

Table 2

DISTRIBUTION OF THE RESPONDING STUDENTS' RATINGS

Number of Items	*Marks Scored*	*Number of Raters*	*Average Ratings*				
			A	*B*	*C*	*D*	*E*
0	1	2	3	4	5	6	7
1	70	13	4	4	4	4	4
2	68	10	4	4	4	5	5
3	67	4	5	4	3	4	4
4	66	3	4	4	3	4	4
5	65	1	5	4	3	4	5
6	64	2	5	4	4	4	5
7	63	1	5	4	4	4	4
8	56	1	4	4	4	4	4
Total Average		35	4·5	4·0	3·6	4·1	4·4

A=Outline; B=Content; C=Resources; D=Methodology; E=Impact.
Ratings: 5=Excellent; 4=Good; 3=Average; 2=Below Average; 1=Poor.

According to the responding students' average ratings in Table 2, Course Outline (A), Content (B), Methodology (D) and Impact (E) were all good, while Resources (C) were in the average range. None of the assessment variables was rated below average, while some of them were rated excellent by some responding individuals, especially Course Outline and the Impact. This shows that the responding students have favourable impression of their teacher's ways of handling the Drama Course as well as the impact that the course has on them.

Examining Table 2 again, one realises that the Course Outline (A) came first with an average rating of 4·5; the Impact (E) the Course has on them came second with an average rating of 4·4, the Teacher's Methodology (D) came third with an average rating of 4·1; the Course Content (B) came fourth with an average rating of 4·0; while the Resources (C) used in the Course came last with an average rating of 3.6. Thus Course Outline was rated highest, while Resources used in the Course was rated lowest.

Question 3: To what degree did students' scores correlate with their ratings? Table 3 provides pertinent information for answering the question.

Table 3

DISTRIBUTION OF COEFFICIENT OF CORRELATION RESULTS (STUDENTS' SCORES VERSUS THEIR RATINGS)

	Coefficient of Correlations	*Significant Levels*
r × E	0·1,552	0·357
r × A	0·0,316	0·470
r × B =	0·0,000	0·000
r × C	0·2,206	0·300
r × D	0·2,990	0·236

X=Scores; A=Outline; B=Content; C=Resources ; D =Methodology; E=Impact.
None of the results is significant at ·05 level.

Table 3 shows that only content rating did not correlate at all with the scores. That is, regardless of whether they scored high or low grades, the responding students rated the course content as good. Other rating variables correlated with the scores in the following descending order: methodology, resources, impact and outline. None of the rating variables correlated significantly with the scores, since none of the coefficient of correlations is significant at ·05 level of confidence Therefore, the students' scores correlated little in some cases and not at all in one case with their ratings. That is, students' performance in the Drama Course appears to influence somewhat, but not much, the way they rated the course, teacher and the available resources.

Question 4: To what extent did the students' impact rating correlate with their course ratings? Table 4 contains relevant data.

Table 4

DISTRIBUTION OF COEFFICIENT OF CORRELATION RESULT (RATINGS VERSUS OTHER RATINGS)

	Coefficient of Correlations	*Significant Levels*
rEA	·2,582	0·268
rEB	·0,000	0·000
rEC	·0,667	0·438
rED	·4,880	0·110

E=Impact Rating; B=Content Rating; C=Resource Rating; D=Methodology Rating. None of the correlation results is statistically significant at ·05 level.

Table 4 shows that the impact rating did not correlate at all with the content rating. This is similar to the obtained result in Table 3. That is, the respondents rated the course content good regardless of the impact it has on them. Nevertheless, the impact rating correlated somewhat with the following ratings in descending order: methodology, outline and resources. That is, the respondents rated methodology, outline and resources in order of important impact they have on them. The methodology has more impact on them than outline and resources. In turn, the outline has more impact on them than resources.

Discussion

How does a teacher know whether or not he or she is doing a good teaching? He can evaluate students' performances through class, aptitude or achievement tests. Through such a process he can find out how much his students get out of his course or how far the objectives of his course have been realised[6]. Another dimension is to let students participate in the evaluation of his course, for they are the best judge in deciding whether or not their own personal objectives have been realised[7]. No doubt, the students can point out the extent their teacher has helped in the realisation of their objectives. The present study has afforded both the teacher and her students the opportunity of evaluating the Drama Method Course (EDU 323) in 1978.

Table 1 shows that all students except one scored above average marks (60 per cent and above) The teacher is satisfied that her students have mastered the course and thereby have gained from it to a great extent. Her wish is for all of the students to score excellent marks (70 per cent and above). This was not possible in the case of the Drama Method Course because of various factors such as the diverse backgrounds of the students and their personalities and various degrees of preparedness.

Table 2 reveals that students have favourable impressions about their teacher's process of handling the Drama Course as well as the impact the course has on them. Was the teacher an important contributing factor to the students' performance?

Table 3 suggests a positive answer to this question. The fact is that students' ratings of their teacher did not significantly correlate with their marks in the Drama Course. That is, regardless of their marks, students tended to have a favourable impression about their teacher's process of conducting the Course. This point can be supported by the following few cases :

The impression of one of the students who scored 70 per cent and above was:

> The *outline* was systematically and constructively presented. One could see a correlation between the content and the course title. The *content* was adequate and appropriate for the mastery of the course. The content related to the Nigerian needs. The lecturer was excellent in her ability, *her methodological* presentation, especially in being able to stimulate references were given and they would be obtained from the library. The course has an *impact* on me for it would contribute to my being a better high school teacher.

One of the students who scored 60 per cent and above said:

> The *course* outline was well spelt out and given out at the beginning of the course. The course *content* dealt with what was needed in Nigeria. The course was presented *methodologically* especially in a way that promoted understanding. Resources were not totally adequate: handouts were given, but many books were not available in the bookshops for purchase. The course has an *impact* on me, but it should be expanded in scope.

The candidate who scored 56 per cent remarked:

> The *outline* was well laid out. It was given promptly. The course *content* was both relevant and explicit. It was somewhat clear and logical. Books were available in the reference section of the library, but not in the local bookshops. The course was relevant to Nigeria, but more emphasis should be placed on dramatic literature.

The above views by a cross-section of the students typify the impression of the whole class, according to the classification of their scores in the Drama Methods Course. Regardless of the students' marks, they pointed out that recommended textbooks, though provided in the library, were not available to purchase in the local bookshops. Yet, the lecturer submitted the list of recommended textbooks months ago to the bookshops. In this regard, the lecturer thought that the complaints of the students were valid and urged the bookshop authorities to purchase the listed books promptly.

Conclusion

The present study is an exploratory one of its kind for it is based on a small sample. It needs to be repeated using the same instrument in many courses and with larger samples in order to establish with confidence some of the findings that are reported here. Nevertheless the study shows that majority of the responding students passed the Drama Methods Course (EDU 323) creditably well. Their opinions were favourable about how their lecturer outlined the course, designed the content, presented the course methodologically and about the impact the course has on them. Their opinions about the availability of textbooks for purchase were less favourable. The majority of the responding students felt that their lecturer was impartial for their grades were commensurate to the efforts they had put forth in the course. Their grade scores did not correlate in any significant way to the way that they had rated their lecturer.

As an evidence of their good impression of the course, the students would like it to be widened in scope and offered for two terms instead of in one term. They pointed out that one term could be devoted to theory, while the second term could be devoted to the practical work on the field. This is a good suggestion that has been receiving the attention of the teachers and the Department. Therefore, participatory evaluation in any course has a great potential to the realisation of the objectives of the course. Therefore, colleagues are encouraged to form the habit of evaluating their courses, using the instrument provided in the study.

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Communications

THEATRE EDUCATION IN THE INDIAN UNIVERSITIES

"When are you putting up your next show, Mr B?" B would manage to make a polite reply, yet he resented the question. After all, he was a Professor of Dramatic Arts, not a showman. Otherwise, too, at least he never waylaid his colleagues like this to ask what they were doing in their classes or laboratories. He often wondered if a university department was really the right place for theatre training or creative work.

Strange, indeed, that no one calculates the "return" of the lakhs of rupees spent on the apparatus or chemicals in a science department, but everyone feels justified in assessing whether a class production in a theatre department is really worth the few thousand rupees spent on it. After all, these class-room exercises are meant primarily for practice and not as public shows. But while people do not expect professional finesse from an undergraduate learning music, dance or painting, they insist on applying the highest standards on the productions of the theatre departments. On the other hand, if these practice-oriented exercises are kept confined to the department, the usual argument is that, since for most of the students of the other disciplines this could be the only good professional theatre available, they must not be deprived of it. Little is it realized that the orientation as public show is bound to affect adversely the quality of the training programme, for it makes the director self-conscious about his own reputation and that in turn prompts him to give the lead roles only to the experienced artistes thereby making it impossible for all the students to get equal opportunities of gaining practical experience.

The irony is that although academicians have such different expectations from a theatre department, they are not prepared to allow it any special privilege with respect to facilities, working pattern, syllabus formation, faculty requirements, etc. Rather, every time a theatre department makes an uncommon request, it is ridiculed as being queer and fussy. It is not adequately appreciated that in view of its vocal and technical activities, it needs secluded accommodation; in view of rehearsals, it must be allowed flexibility in respect of syllabus and working schedule; in view of its insecurity as a profession, it has to be promoted through stipends for all; in view of the needs of the specialist instruction, it is wrong to have a permanent faculty or even to insist on such research degrees as are required in the other disciplines.

Even otherwise, the position of a theatre department has to be entirely different from the academic departments because of the unique position of the theatre trainees. Through their performance, they come to be known to everyone, but that "privilege" is not always healthy—thanks to the notoriety that continues to be associated with the profession of acting. What is more, since in the world of arts, an instructor is a fellow-worker rather than a remote "sir", the comparatively intimate relationships between the teachers and the taught often give birth to unseemly scandals which come to acquire a greater measure of credibility because of the seemingly bohemian ways of these "arty" creatures. No wonder, to the embarrassamet, even harassment, of these budding artists, in the less advanced universities, the less cultured students often indulge in lewd catcalls. In fact, exasperated by the incessant breath of scandal and politics in his theatre department, a puritanical vice-chancellor once exclaimed that if he could have his way, he would pull the shutters down on that "kanjharkhana"!

Well, there are those others, too, who, even on purely academic grounds, have serious and conscientious objections to the very existence of the theatre departments in universities. A university, they argue, is a place for imparting education in liberal arts rather than one for specialist training in professional arts. Cultivating interest in theatre, they say, is one thing, and claiming to create expert artists quite another. At best, university education can aim at initiating young people into arts or moulding their artistic sensibility; it must not presume to produce actors, dancers or musicians. Indeed, a man holding a Master's degree in literature does not necessarily become a professional writer. Being a place for reading, reflection, research, disputation and seminars, a university promotes discovery and experimentation and thus concerns itself with the "why" rather than with the "how" of the practical arts. It might envisage a future theatre but cannot make it its business to create one. It might inspire the creative minds to aspire for artistic excellence, but it will cease to be a university if it assumes the role of a workshop training journeymen and technicians. Indeed, it should be beyond the concept of a university to produce skilled artists any more than skilled artisans.

The theatre-men themselves—even those who have been imparting theatre education in universities—are sceptical about the wisdom of relating training in practical arts to the university degrees. For example, Balwant Gargi and Amal Allana, both of whom have headed the Department of Indian Theatre at the Panjab University, Chandigarh, are opposed to the awarding of Master's degree to such graduates as spend just a couple of years in the theatre departments. They feel that the universities are in a hurry to give degrees and that there is hardly anything professional about the training imparted there. It is, indeed, a fact that whereas in the ancient system, an art aspirant used to spend 20 hours a day with his or her *guru* for many, many years before he or she could feel adequately initiated into an art, today only after a couple of years' smattering, university is prepared to proclaim that he or she is a "master". And this despite the fact that for the other professions, the same university would insist on much longer spells of instruction. For example, after schooling, a student spends a year or two in a college before joining a medical or an engineering institute where he is required to study for four to five years before he gets his first professional degree. Even the National School of Drama, after three years' training, offers a mere diploma, Thus, feels Amal Allana, a university, if it must have a theatre department, should have three years' general training in theatre arts and at least two years' specialisation before it certifies a student's "mastery" in theatre. Only when the training is spread over a long period, she feels, would the trainees look upon it as something more than a hobby course which is often forgotten within months of completion. Only if one spends five to six years on a certain training would one feel committed to pursue it as a life-long vocation. Such a motivation alone can breed professionalism rather than careerism.

Of course, there are those others who would even challenge the very idea of theatre training. Art, it is argued, is something in-born and not a matter of training—a view supported by the fact that the great geniuses did not owe their creativity to any formal coaching; moreover, academic regimentation has often proved fatal to creativity and originality. True, technique can be taught, but in an art—it is argued—more important than technique is imagination which cannot be a subject of training or teaching!

Certainly, such an extreme view is no longer valid. Theatre training has come to stay and it is too late to raise such objections. No wonder, when asked whether an art can be taught, B.V. Karanth, who was then the Director of the N.S.D., retorted rather sharply, "And why not? We *are* teaching it! Why ask this question? Art alone can be taught—not life or Nature. There may not be many theatre artists in India today, but even these wouldn't be there if the NSD had not been there." Training, concedes Karanth, cannot make an actor creative, but it can equip him to be creative if he has the right imagination. It is like teaching grammar, the sound knowledge of which is imperative for a writer though this knowledge alone cannot guarantee creative writing. A genius, according to Karanth, is one who dares to break the accepted norms of a medium creatively; but before he can do that, he must know the norms. It is there that the training can help.

Maybe, it is no use asking whether theatre arts can be taught, but it is quite different if we ask what we need theatre training for and who needs these trained artists. Surely, we could need them for the professional theatre; but do we have one? We do not have programmes related to community or children's theatre so as to need trained directors; nor are there theatre classes in schools and colleges to absorb the trainees as theatre teachers. Even if we concede for the sake of argument that precedence of training can open such avenues later, it would be pertinent to ask if all these personnel would need the same training. Aren't the needs of the professional theatre different from those of the teachers in schools and colleges? After all, being a great creative artist is one thing and being an effective initiator quite another. One may be a good director of plays but a poor director of community theatre. A professional theatre artist may or may not go in for in-depth study of dramatic literature and theatre history but a teacher must; what is more, the latter should also study developmental psychology, creative process and teaching techniques. A teacher's concern shall be with the basics which are unchangeable and therefore unlikely to get outdated. But though he may be laying sound foundations, teaching these basis for a long time, an artist might find himself stock-bound and stereotyped. Once a professional artist gets typed or his art gets standardized into the straitjackets of "blocking", "analysis", "methods", and "laws", he ceases to be creative. Indeed, the different theatre activities require different kinds of personnel and thus no training can be so comprehensive as to produce at once theatre historians, drama critics, playwrights, actors, directors, theatre managers, theatre teachers, community programmers etc. Perhaps it is time to realise that training for the professional theatre has to be different from the one meant for the related fields, and that it is naive either to run the professional courses for the generalists or to expect professional standards from the training that aims at producing generalists.

This does not mean that we should have purely theoretical course work unrelated to practice, or purely practical training without any theoretical frame-work. It only means having a more realistic approach of relating the separate needs to the several equipments. Once the theatre education is viewed in the context of the diverse aims, requirements and resources, we shall have to admit that the recent trend of opening theatre departments in university after university is a blind aping of the West and implies extravagance that the poor India can ill afford. Indeed, it is foolish to spend huge sums on a training which prepares for a profession that is simply not there! Per force, the trainees seek livelihood in fields for which they were not properly trained or for which they did not have to be trained at such huge expense. In fact, the chances are that even if some of them get jobs in the profession, the training has not been really "professional" for want of vital contact with professional companies.

In the West, the position is different, for training is followed by apprenticeship with professional groups; or else the theatre departments have professional repertories of their own. In the United States, there is the additional advantage of theatre companies being situated on or near the campuses—an ideal situation that works to the benefit of both. Even as the students get the opportunity of seeing good theatre, the companies can test their plays, for they are assured of audiences for all types of productions. Likewise, while the theatre students get chance to work with the professional giants, the companies avail themselves of the fresh talent. What is more, while the artists can acquire greater technical depth by working as assistants in the universities, the trained graduates may earn professional experiece as apprentices. Moreover, the great artists can share their expertise through spells of teaching, while teachers may get the chance to reburnish their creative faculties by working as advisers, consultants or even as artists. This kind of collaboration can help the universities modify their curricula to meet the changing requirements of the profession even as the productions of the companies can benefit from the latest trends in techniques and equipments that the universities may procure for experimental work.

In India, where there is hardly any worth-while tradition of professional theatre, such collaboration cannot be had at all. And surely no university department is going to have such unlimited resources as to afford an up-to-date theatre and a professional company of its own. In any case, no university can first create a professional repertory overnight. Even if that were possible, in the absence of vocational avenues, where will the graduates get the opportunity to grow as artists? A recent publication of the N.S.D. contains a directory of its alumni and it is depressing to note that quite a few of its trainees have ended up as housewives, some in the services of such untheatrical departments as Post and Telegraph, and some others in business! Now the N.S.D. budget for a handful of its students involves expenditure of lakhs of rupees on each graduate and if even these few people cannot get adequate openings in the profession, where is the wisdom in opening departments of theatre or dramatic arts in university after university and then insisting on these departments aiming at "professional" training? And that when the universities have neither the right environments, nor the obligation to undertake such training, nor even the vocational avenues for the degree-holders.

This does not mean that the universities should disown their responsibility towards the arts; but, surely, instead of aping the West, we must think of the situation obtaining in India. For example, training for the professional theatre can be confined to the professional institutes like the N.S.D. and to a few similar regional institutes which must be allowed autonomy and kept out of the inhibiting jurisdiction of the UGC. Universities may have theatre departments but with aims other than those of imparting professional training. Surely, theatre studies can be a most legitimate part of the liberal education; after all, liberal education stresses the study of literature and one of the greatest forms of literature is drama, which is best realised on the stage. Also, through good theatre productions (not necessarily professional) and by involving students in them, a school or college can help realise one of the most cherished ideals of liberal education—to create good tastes. In fact, that is the reason why it is often suggested that theatre arts should form an integral part of the school curricula. Besides, catching them young, theatre teachers at school could give them right training in the manipulation of body movements and speech.

In the colleges, theatre arts could be an elective subject to go in combination with allied subjects like literature, music, dance, fine arts, aesthetics etc. In the Honours system, it could have science-like practicals in studio in respect of theatre crafts *plus* detailed study in respect of the history and the theory of drama. In the broad pattern of liberal education, the theatre can be treated as a completely separate discipline in the study of which other subjects should serve subsidiary roles. For example, the study of language may be oriented toward speech-modification, the study of literature towards analysis of dramatic masterpieces, the study of psychology towards character-interpretation, the study of aesthetics towards dramatic criticism, the study of fine arts towards accommodation of painting, music and dance, the study of history towards growth of theatre, and the study of science towards optics and mechanics of theatre technology. At the Master's level, there could be in-depth study of varied techniques with regard to acting, production, playwriting, scenic design, theatre administration, technical management etc. with scope for specialisation in children's theatre, community theatre or theatre training in general. The idea should be to produce not the specialist artists but the well-equipped generalist leaders who could motivate activity in various fields of educational theatre. These scholars could go in either for research in historical studies, dramatic criticism, etc. or for formal training in theatre education. All this is possible if the universities, dropping the claim to train for the profession in competition with the professional institutes, aim their programmes at recreational· liberal, academic or at best pre-professional purposes. Indeed, thus equipped, these graduates can prove better students in theatre and film institutes, and better executives in radio, T.V. and cultural departments like Song and Drama Division, Public Relations, Youth Welfare etc.

Once the distinction is made between theatre studies in liberal education and theatre arts in professional training, it would be seen that the universities can play really important role in promoting theatre education. Ridding itself of the role of creating artists for the show-business, a university could confine its activities to its legitimate role as a centre of fundamental research, pure experimentation, academic theory, teacher training and personality formation. In such a set-up, a university department of theatre could gather playwrights, critics, actors and designers for meaningful exchanges and thus help produce innovative plays without the pressure of box-office. Likewise, it could hold festivals and contests which might yield occasions for discussing artistic and academic problems. Also it could serve as centre for community theatre, invite visiting companies, create lending libraries of plays and production scripts, and encourage translation of plays from one language into another. Its extension or field services could organise refresher courses for the theatre teachers and professional practitioners, arrange seminars and production-oriented workshops, hold short-term courses for amateur artists, promote taste for theatre through activities in the children's or community wings, offer scholarships for documenting performances and traditional arts through cassettes, photographs and documentaries, and publish scholarly books by professionals. It could also institute fellowships to encourage its graduates to work with the amateur groups.

It is high time such an exercise in reallocating the fields of activities in respect of the professional institutes and the university departments was undertaken for, because of the mixing ot the academic and the vocational functions, the situation has got riddled with incongruities. For example, either we have the situation of theatrically blind leading the blind in the departments where men with high academic qualifications but without any practical experience of theatre are teaching the professional courses, or else such men are heading the university faculties and guiding doctoral programmes as, despite their high professional standing, have no more than a diploma from the N.S.D. No wonder, we have odd conglomeration of teachers—some excellent scholars but awful directors, and others great directors but poor teachers. Some fail to impress when judged by productional excellence, others when assessed on the basis of academic work. Moreover, since every university cannot afford to engage top artists in every field, it has either to make do with the mediocres or depend on the visting faculty. In the latter case, the professionals in theatre arts have to turn amateur teachers and the results are at times disastrous. In any case, in the hands of such varied staff, the university productions are invariably uneven, ranging from daring to dismal—some bold and brilliant, others clumsy and pretentious.

It is not difficult to see that bifurcation of theatre education between universities and professional institutes would help the latter as well, for they could then, pursue the aim of feeding professional theatre with singular devotion without any extraneous considerations with regard to the projects related to research, teacher-training, or the growth of amateur, community and children's theatres. Since all those who join shall have the same aim—career in professional theatre—there would be no clash of interests or the need to cover everything. No longer required to serve the function of a drama club or an extension of literary and historical studies, class-room productions of a professional institute need not be public shows. Also prepared to be judged by professional excellence alone, its faculty need not comprise men with decorative degrees. In such a set-up, unlettered *gurus* and traditional artists can hope to enjoy status commensurate with their professional stature and without any ground for inferiority complex.

Chaman Ahuja

ROLE OF ENGLISH LANGUAGE IN TECHNICAL EDUCATION SYSTEM

Communication—giving and receiving information is one of the prime needs of human beings. Berlo (1960) while analysing the process of communication came out with a very popular model of communication known as S-M-C-R- model after his name; wherein each one of these letters represents four different components; Source, Message, Channel and Receiver.

Language representing human ideas and thoughts in the form of socially accepted codes becomes, among other things, a very potent medium of communication. In addition to the verbal medium i.e. the language, there are a couple of non-verbal modes of communication like facial expressions, head and hand movements, eyes etc. Through these gestures people communicate their feelings to others and they also supplement verbal communication. Sometimes the non-verbal gestures become a more powerful and effective means of communication. In a teaching learning situation communication assumes an all the more important dimension since while teaching or learning we do nothing but communicating in some form or another.

In this paper the importance of English language—its teaching and learning—especially in the context ofTechnical Education System is intended to be highlighted

Specially in the post-independence period the problem of language had been occupying the minds of politicians, academicians and administrators alike, in our country. The Govt. of India appointed several committees and commissions to advise them, among other things, on the English language issue especially its status.

English—as a Language of Comprehension

The University Grants Commission appointed English Review Committee (1955), Official Language Committee (1956) the Kunzru Committee (1957) and the Study Group (1967) appointed by the Ministry of Education are some other forums which discussed the language issue thread-bare and all of them accorded English language the status of the *"Language of Comprehension"*. The language of their recommendations might differ but the spirit behind it was the same. All of the above agencies—official and non-official share the view that English will continue as Language of comprehension in this country. It means that for the majority of Indians the primary aim of learning English may be to develop the ability to read and comprehend.

A Library Language

Education Commission (1964-66), appointed by the Ministry of Education, Govt. of India, in view of the national objectives of teaching English, were of the opinion that "English should be the most useful 'library language' in higher education and our most significant window on the world". This very clearly envisaged the need for the development of reading skill among the students. The phrase 'English as a library language' gained countrywide popularity after the publication of the commission report. It reflects the English language teaching policy in the post-independence era. Thus English continues as a compulsory subject from fifth/sixth standards of schools at least upto the High School/Higher Secondary stage. In the states which have adopted the new system of 10+2+3, English language is taught in the same capacity upto +2 stage. The concept of a 'liberary language' is very much in tune with the earlier thoughts on the subject—'language of comprehension'. In both the cases the emphasis seems to be on developing the skill of reading amongst the learners of this language at school and college level so that the students can make use of the books in their respective subjects which are available in English.

Teaching English as a 'library language' might envisage the development of certain abilities in the students. These may be the abilities to understand the written material in subjects they offer; to read materials written in English at an optimum speed; to refer to the relevent literature in one's subject; to make a precis/summary of what has been read by way of making notes; and to express the contents read through English in one's own mother tongue (regional language) by way of translating it. With a view to developing the abilities detailed above the grammar—translation method of teaching English was introduced in schools and colleges laying stress on the development of the abilities of reading and writing. Desai (1975) found that it would be possible to introduce library language oriented syllabi at different levels of degree courses for commerce and science students and it would also be possible to prepare readable textbooks on the basis of useful vocabulary.

Medium of Instruction

The Education Commission (1964-66), while giving a serious thought to the medium of instruction said "We agree with the decision of the All India Council for Technical Education that, for the present, English should continue to be the medium of engineering education. . . . English will always remain an important library language, and a good knowledge of English, as of other world languages will continue to be required of students, going in for study and research in Engineering". The Commission, however, recommended that the work of getting good text books on technical subjects prepared in regional languages, as well as the translation of the standard textbooks written in foreign languages should be undertaken, of course, retaining a common international terminology. While considering the issue of selection of students to technical institutions the Damodaran Committee (1970-71) recommended that this (selection) ". . . should be based on the capacity for practical thinking, analytical approach to problems and the mental aptitude towards engineering subjects. *It is necessary that the students must know English language which alone would provide them immense opportunities to learn about the rapid technological advances made in the world from the vast treasure of books and journals published.*"

It would not be out of place to throw some light on the language policy of the Govt. of India—popularly known as the three language formula. This formula makes it obligatory on the part of every learner to learn at least three languages: one's mother tongue (L1), Hindi as the national and link language (L2) and English (L3) as a foreign language. In some cases, specially in Hindi speaking areas English will be the second Language or L2 of the learners. It is an established fact that every learner will feel himself at ease in understanding and expressing in his mother tongue. India is a multi-lingual country and thus the regional language learning is supported and encouraged as a policy matter. Gokak (1964) is of the opinion that"with the rapid expansion of primary education we find that teachers of the regional languages also do not know their job well. The time has come for planning the teaching of regional languages on scientific lines on which the teaching of English is being planned today . . . It has been suggested in the interest of national integration that every Indian should learn a regional language other than his own, in addition to Hindi. This will be easy if the teaching of each regional language is planned on scientific lines. It will especially facilitate the diffusion of Hindi which will ultimately be the sole official language". Gokak (1964) further goes on to mention that the National Integration Conference accepted the aforesaid three language formula and "recognised that Hindi must develop ultimately as the link for inter-state communication, but felt that, since the process of development involved the expression of modern concepts in the language, the process would occupy some time and, till Hindi developed suitably English would continue to serve the purpose that it had served so far as a medium of interstate communication". But English appears to be the link language and facilitates inter-state communication even till today.

With a view to keeping pace with the rapid scientific and technological developments in the world it becomes imperative for the learners to learn foreign languages including English. Eminent educationists have accepted that 'mother tongue' is the best medium of instruction. In the words of Mahatma Gandhi, ". . . . the foreign medium has caused brain fag, put an undue strain upon the nerves of our children, made them crammers and imitators, unfitted them for original work and thought and disabled them for infiltrating their learning to the family or masses".

But in view of the practical utility of the modern foreign languages especially to the students of science and technology and research workers in this field the recommendation of Robbins Committee (1963-64) is relevant at this stage: "A course involving the study of two or three modern languages, with the emphasis on standards in oral fluency, translation and interpretation, and combined with the study of the relevant background of the countries concerned, will attract students and would offer them opportunities to develop at a high level their ability to use the languages in fields where skill in a language needs specially to be supported by knowledge of the background in which the skill is applied."

Once the fact is established that English language teaching is indispensable in the area of technical education, the question now arises as to what kind of English should be taught to the technical students. Should they be taught the same syllabus as in the case of courses other than science and technology? If the answer to this question is in the negative, then what should constitute the course in English for technical students?

Semantic Versus Structural Syllabi

As regards the teaching of foreign languages/second languages various approaches propagated by different schools of thought had been followed in the past. But Van Ek's (1975) approach considering *topic* (education, travel); *setting*, (the bank, the P.O.) *notion* (size, frequency); and *function* (greeting or inviting) as the units of organisation while designing the syllabus for the language learners appears noteworthy. Syllabus designed on these lines are called "semantic syllabus" as opposed to the traditional 'structural syllabus'. Some explanation of these two kinds of syllabi needs to be given at this stage. Structural syallabus consists of grammatical structures as the unit of organisation. The syllabus designer's concern here is to decide in which order the structures would be taught to the students. One of the criticisms of this approach is that since the structures exist so they must be taught whereas the syllabus designer must argue that a structure is useful, so it must be taught. Johnson (1977) has pointed out that 'structural syllabuses do not allow you to see the practical applications of the language to real life'. He further goes on to say that these syllabuses teach the right language but they quite often teach it in the wrong situations. Semantic syllabuses are a recent development in this field. In this approach the most common units of syllabus organisation as mentioned earlier are the topic, the setting, the notion, and the function. As a result of this approach we came across teaching materials which are organised in such a manner that each one of the lessons deals with one topic, one setting, one notion and function and not with one grammatical structure. Syllabuses prepared on these lines are also known as functional syllabuses and notional syllabuses, taking functions to be performed and notions to be expressed as their units of organisation.

English for Special Purposes (ESP)

Chomsky (1965) is the advocate of the transformational and generative grammar who introduced the terms like *competence* and *performance* the latter pertains to the actual use of the language in concrete situations. English language teaching in the technical education system must be on the same lines and should also be in consonance with the concept of 'language register' the term used by Halliday (1964) and others, who have observed that "Language varies as its function varies; it differs in different situations. The name given to a variety of language distinguished according to its use is "register". The category of 'register' is needed when we want to account for what people will do with their language". Wilkins (1976) describing the special purpose language courses commonly known as ESP (English for Special Purposes) says these are the courses. "... in which the learners' objectives are unusually well defined." He refers to the concept of 'varieties of language (registeres)' and the types of English like legal English, Engg. English etc.

Technical English

One of the recent innovations in the field of English language teaching is the introduction of "Technical English" which envisages a specialized vocabulary (scientific and technical words) and a high frequency of certain types of structures which are typical of Technical English e.g. the use of passive and universal present tense and profuse use of imperative sentences for giving instructions and the like.

Munby (1978) makes a very important observation saying that " . . . the specification of communication requirements or needs is prior to the selection of speech functions or communicative acts to be, taught. By drawing up a profile of communication needs one can more validly specify the particular skills and linguistic forms to be taught."

Need-Based Curriculae

The Curriculum Development Centre at the Technical Teachers' Training Institute, (W.R.), Bhopal which is one of several such centres established by the Ministry of Education, Govt. of India, like other sister institutions where work of similar nature is undertaken, conducted a Job Survey for the polytechnic passouts and determined the needs of the prospective employers from which emanated the curricular needs of the students. This centre has developed the curriculae in Engineering and Allied subjects for the states of Madhya Pradesh and Gujarat.

A unique exercise was undertaken with a view to developing the instructional materials in English subject alongwith other engineering subjects, for the First and Second and Third years of the Diploma in Engineering courses which culminated in the production of two textbooks viz. 'A course in Technical English—Book I (1971) and 'A course in Technical English—Book II (1974). These books provide ample scope for learning scientific and technical words and also the structures needed by the students and at the same time there are chapters on writing definitions, instructions, descriptions and so on which are the semantic items referred to by Wilkins (1976).

Present State of Affairs

The state of affairs as regards the teaching of English language in polytechnics in M.P. is that it is taught as a compulsory subject in the first two years of the three year diploma course. In the first year, emphasis is laid on the introduction of about 600 scientific and technical words through eighteen units written on scientific and technical topics where in, among other things, some structures e.g. scientific present tense, passive, imperative, it and when clauses which are typical of Technical English have been introduced. The emphasis once again is on developing the abilities of comprehension and also written expression. The oral production of language has not been given any place in the syllabus. As a natural consequence the audio-lingual method—which provides scope for developing the ablity of speaking, among other things, is not adopted. On the contrary the structural approach—developing the abilities of reading, understanding and writing—is invariably adopted by English language teachers. There was some resistance in the initial stages from teachers with a background of English literature essentially. By this time the innovation has been internalised both by students, English teachers as well as the teachers belonging to other disciplines. But in the Engineering Colleges of Madhya Pradesh which are affiliated to different Universities of the State, the syllabuses and teaching methods differ from institution to institution. In some of the Universities some books consisting of English prose passages, poems, stories and dramas are prescribed to the students of first year of the Engineering Colleges, whereas others have subscribed to teaching of Technical English. Both in Polytechnics, as well as, Engineering colleges technical report writing and business letter writing are included in the engineering syllabi. There is no provision of teaching spoken English in the syllabi of Engineering Colleges also. So far as the question of the background of the teachers of English in both the kinds of institutions, they possess Master's degrees in English literature and their average teaching experience may range between 15-20 years. Excepting for a few stray cases these English teachers did not undergo any formal professional training in language teaching. But a number of English teachers of Madhya Pradesh and Gujarat Polytechnics through orientation programmes, workshops, and instructional material preparation and evaluation projects have been trained and oriented for this innovation at the Technical Teachers' Training Institute. Bhopal. By and large this subject of English receives a step motherly treatment from the students and the technical teachers alike and is designated as a non-technical subject.

Testing English

With the change in the curriculae, as a natural consequence, some drastic changes in the Examination System were also introduced by the M.P. Board of Technical Education. The scheme of assessment makes provision of 40% of the total marks for the progressive (internal) assessment and are given by the teacher concerned on the basis of periodical tests, class/home/library assignments and the remaining 60% are reserved for the final examination conducted by the Board. It has been reported and also observed that in both Polytechnics and Engineering Colleges the students who get good marks in the English (Communication Skills) also score equally good marks in other engineering subjects. One major component of the examination in engineering subjects is the practical test including viva voce which is sometimes conducted in English and sometimes in Hindi or using both Hindi and English simultaneously.

Three-tier Manpower Spectrum

Damodaran Committee (1970-71) also gave some thought to the three-tier technical manpower spectrum existing in the country in which Engineers and technologists holding Degrees in Engineering and Technology and engaged in theory oriented design, research and development work are at one extreme in the industrial situation, and the craftsmen or skilled workers (ITI certificate holders) possessing high skills in their respective trades are at the other extreme. Both these categoies are easily distinguishable. But the 'technician' (Polytechnic Diploma holder) who is defined as "A technical employee, whatever his designation, who occupies a middle level position between the craftsman and the technologist; where work requires the application of technical knowledge higher than that of a skilled worker but below that of technologist; whose work moreover requires a proficiency in skills higher than that of a technologist but lower than that of a skilled worker", Damodaran Committee (1970-71). Thus the position of a polytechnic diploma passout is very crucial. He forms a vital link between the technologists and the craftsmen and thus represents a compromise between theory and skill. He performs supervisory functions and translates the technical instructions, and interprets drawings etc., and explains them to the craftsmen. Thus from the employers' point of view the technologists and technicians both should be well versed in English language. Technicians in due course of time, if improve their qualifications etc. become eligible to attain the position of the technologists. The industry (public and private sector) and the Govt. departments are the major clients/employers of the people of these categories. These employing agencies administer tests and conduct interviews before offering them jobs. Apart from the technical knowledge a candidate possessing the knowledge of English language both written as well as spoken is given due weightage. On many occasions candidates possessing, good knowledge in technical subjects find it difficult to get jobs only because they are deficient in English—spoken and written.

Conclusion

To conclude, it could be said that the course designers and curriculum planners of English language in general and technical and professional courses in particular cannot afford to sidetrack the issue of relevance and communicative competence while preparing curriculae.

Before planning any curriculae for language learners it would be imperative for the course designers to assess the language needs of the learners as well as give some thought to the techniques which would be used to teach them. No matter what name is being given to the kind of syllabus one prepares more attention needs to be paid to the two crucial aspects: *What* is it that should be taught (the content) and *how* is it to be taught (methodology). The methodology part, in my opinion, needs careful consideration in this case which entails the development of communication skills—Listening, Speaking, Reading and Writing.

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N.P. Tiwari

E S P : A SOCIOLINGUISTIC CONSIDERATION

The concept of ESP inheres a presumption that adult students learn English for a certain *purpose*, and there is a constant awareness of the purpose on the part of students as well as teachers. Also, the main concern of ESP is specific *needs* of students with the objective of solving their specific linguistic difficulties.

In a situation like India's, one of the specific purposes of English learning, as students (and their parents) expect, is: their ability to function in society, and if English is taught keeping in view the specific/specialised *professional needs* or demands only, the students cannot communicate effectively in different contexts; they are handicapped, for example, in social, cross-cultural and interdisciplinary encounters as also in mutual communication with proper linguistic etiquette. Science/engineering students of the Indian subcontinent study English not because it is in any way directly relevant to their science/engineering courses but because they do not want to be handicapped when it comes to communicate with English-speakers. They study English just not for the science/engineering courses they take, but for a career, for life time. Whatever is 'specific' and 'purposeful' to them, in so far as their total communicative requirements are concerned, is the real 'S' and 'P' of English teaching, which the teacher and textbook designers must appreciate.

Though every English teacher is not a teacher for every purpose (as every sort of English seems to have become ESP), but the expectations from English class are genuine: when a student finds that he cannot speak to an English-speaking foreigner about anything of mutual interest, or cannot carry on general conversation or his spoken interaction outside the English classroom is poor, even after years of English studies in school, college and university, he is naturally bored and, at times, frustrated. He is ambitious to use English for communcating internationally. If ESP cannot meet his international or social language needs, or enable him to function as a *whole* person within a foreign or second language environment, then it fails to satisfy his communicative needs. What the ESP learner wants to do through English is more important than mastery of ESP as a never-to-be used subject.

The need is to recognise the social role of English. Students do not want to be locked into a narrow domain of ESP skills (ESP is no tool which can be handed over to learners to decipher science/engineering), learning of which is, in any way, possible only when the basic language, 'E', is strong. Since English to most of them is also a prestige language, they naturally expect such English teaching which enables them to use the language with confidence in social and professional gathering, often in an international setting. They want to learn the language skills or techniques of recognising differences, clarifying misunderstandings and avoiding or resolving confusion in the process of inter-personal communication.

ESP, or English language teaching in technical instiutions, needs to be integrated with English as a lingua franca, at least in countries where English continues to be the medium of instruction. It has also to be made *socially* and internationally effective, and useful. It is no gainsaying the relevance and utility of ESP teaching, rather it is to complement it by also including a much needed (and unfortunately, so far neglected) social language within its need-oriented 'specific' framework. I do not plead for a social English syllabus, however. But I do plead for including in ESP design a minimum of social English, important and necessary for such communicative functions, like, greeting, inviting, making requests and suggestions, giving advice and direction, warning, making persuasion, expressing compliments, gratitude, agreement or disagreement, eliciting response or interrogating, or politely getting to know a stranger, etc., which are equally vital and can be developed through a *functional* ESP programme.

The language needs of engineers/scientists are simply, to quote R. Richterich, "the requirements which arise from the use of language in the multitude of situations which may arise in the social lives of individuals or groups." An ESP teaching programme cannot exclude parameters like the 'settings' or situations in which the student may wish to use the language; the subjects or 'topics' he will wish to talk about; the 'notions' he will need to be able to handle in the foreign language; and the grammatical structures his language needs indicate he must master. As such, there is an urgent need for identifying sociolinguistic needs of ESP learner: his language needs/demands have to be reidentified/reassessed within a functional syllabus design; and it is for the syllabus designers and course writers to restructure the need-based ESP curriculum, accommodating sociolinguistic instructions which will develop his ability to function linguistically in society beyond the technical institution. If the ESP teaching is realistic and student-centred, then it has to be re-tuned by providing a functional dimension to it, integrating functional materials within the existing curriculum, to arm the students with the verbal weapons necessary for an effective use of language both in and outside the classroom.

Wherever we use language in our contacts with other human beings, in work or at home, we have a real sociolinguistic situation, which is, indeed, a human situation, and therefore, language teaching, for whatever purposes, must include all such items—intercultural, etiquette-based, for example—that facilitate mutual communication. There are frequent opportunities for international, cross-cultural interactions, and ESP learners (studying English hardly for one or two semesters/years in a technical institution) need also be prepared for a satisfactory social encounter, so that communication is not reduced to a mere one-way traffic.

When professionals from different countries meet and use English as a means of communication, there are factors which can hinder mutual understanding. Students have to be taught, as they themselves feel, the devices for using language in order to 'mediate' with each other, for, a professional situation (or need) is not devoid of social situation (or need). When there are social encounters in any profession, ESP trained students find it difficult to 'use' language effectively as they are not taught the language of such encounters. Their ESP training (against a poor background of 'E') does not provide them the ability to generate expression, and the knowledge and ability to use expression appropriately in different contexts. The communicative resource provided by the ESP class or textbooks does not equip them with linguistic skills that contribute to successful interaction. ESP, in other words, fails to improve communicative competence of the learners in so far as their over-all development (including non-verbal behaviour) or appropriateness of use of language within a social context is concerned.

Teaching the language of polite routines for occurrences not directly linked to the conversation ("Could you tell me where there's a urinal)", expressions to show non-comprehension and to check what has been said ("Would you mind saying that again?"), recognising the cues for speaker/listener's signals for polite attention (Did you really?"), being able to engage in polite exchanges of personal information ("Where do you come from?"), formulas signalling the structure of the encounter ("it has been nice talking to you"), being able to talk about topics used in any social conversation (like weather, health etc.) or in situation of polite social contact (food and drink), and expressions of accepting or declining something with thanks, etc. are more needed and acceptable to students than texts with heavy lexical density. They often find themselves misunderstood, or their intentions misread; they do not have the skills required for mediating successfully with each other. A very important area of human interaction is thus left out from ESP. After all, these future engineers have to participate in debates, discussions, analysis and exposition in a social millieu, and unless ESP is socialised to meet their social communicative needs, it cannot be effective.

If the teaching of language is intended to equip students with all the necessary tools of linguistic manipulation for effective communication—intra/inter-disciplinary, specialist to specialist, specialist to non-specialist—it is not the technical or engineering or workshop English alone that is required, but the fundamental elements of language that work beyond the classroom or profession. To that extent. students need the general language 'E' that enables them to begin to understand their science/engineering classes and textbooks. I am tempted to call it a general ESP characterised by;

(i) modern standard English which is readily comprehensible by educated native speakers of English in all countries where English is the first language;
(ii) English which provides for everyday situation, i.e. social, cross-cultural conversation, business and personal correspondence, reading professional journals etc.
(iii) English which contains such special items as refer to the students' situation in technical institutions with its daily processes, structures and organisation.

Since the English teacher has to work from the 'English' his students already know, and not from the dry, unappealing ESP textbooks, or from what others think they should know, he is called upon to deliver the necessary linguistic equipment for free exchange of ideas, technical or non-teachnical, in a non-English environment. As the students want his help in their 'general', non-specialist language use, they have to be prepared to operate with English in linguistically and socially varying situations. To that extent, there is a need for conceptual readjustment in ESP to accommodate "the realities of diversity and adaptation." While the 'S' and 'P' of ESP have to be made effective for such international situations in which the non-native speakers of English have no difficulty communicating socially as well as professionally, the 'E', the structure of which is fundamentally that of General English and a pre-requisite for understanding or using the specialist subject matter of science/technology in English, has also to be improved. In other words, the present ESP has to be moulded to integrate certain sociolinguistic realities so that they do not feel shy or embarrassed in situations in which they are involved with persons from their own cultures and languages/foreign cultures and languages. Adapting to their needs, the teacher may follow some kind of middle road and teach English as a totality of expression and content.

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R.K. Singh

ON ACADEMIC FREEDOM

Academic Freedom, during the last few decades has gained the status of an issue of world-wide significance. One hears the loud cries of men concerned with Education demand the rights of those in the field, for full expression of thought. This natural impulse for free expression is as old as history. The eloquent self-defence of Socrates when charged with corrupting the minds of the youth of Athens, is a document of the right to freedom of expression. Man has, time and again, faced intolerance and ridicule from his fellow beings for propounding unconventional doctrines. The ridicule attached with the name of Cárváka—a doctrine of Materialism in an era of Idealistic thinkers, the constant wanderings of Bruno (The theologist), the fanatical persecution of Galileo, are all illustrations of the fact. But although, Cárváka became a bye-name for the infidel and the epicure, there seems to have been no persecution of the thinker, by the people as represented by the State. Indian tradition, perhaps because of the nature of its religio-philosophic inspiration has shown tolerance of new views and philosophies through the ages. It is this quality that has probably led to the acceptance of Buddha and Mahavir; of poet saints like Kabir and Haridas.

Today, however, when reflective thinking seems to have become the prerogative of the 'educated' mind, and education itself changed in its context and put into the confines of institutions, this 'freedom' of expression in academic pursuit, has become dependent on the individual-institution relationship. Constantly, one hears of instances when the individual is up in arms against an institution or against another individual who is, accused of infringing on his 'freedom'. This intolerance of another's freedom seems to have gained vast proportions in 'free' countries. Despite legislations and various efforts by the state there is constant violation of an individual's or a group's freedom, until one begins to wonder if it is within the precincts of the state to ensure the 'freedom' of its citizens.

In the world of Academics one hears protests against parochialism in appointments to educational instiutions. One hears of groups of students demanding representation on academic bodies of universities and faculties. One hears the reverberating outcry of a long suppressed scholar who revolts against those above him—all this under the banner of Academic Freedom.

What is this Acaaemic freedom one hears so much about? It will be my attempt, in this paper to understand the connotation of the term. To some of us it may connote freedom to the academic from state intervention; to others—unrestrained power to the pen. Whatever, be the connotation, the phrase commands almost universal assent. But this concensus conceals real and fundamental differences in opinion—for its interpretation depends on the concept of freedom—and freedom means different things to different people. So also the term academic. Some of us may confine the connotation of the term to the institutionalised machinery for Academics, others may extend it beyond this.

Going to the dictionaries one finds three varying definitions of the term :

—Pertaining to the fields of English, Foreign languages, History, Economics, Mathematics and Science.

—Pertaining to the liberal arts.

—Pertaining to the realm of ideas or abstractions.

The third definition seems to me, to be enveloping the other two as well. Academics would mean, to me, then, not only that which is associated directly or indirectly with the Academy or Faculty—with a particular subject area or field—but any work of worth which contributes to human knowledge or information.

It is not as easy, however, to find a definition to a concept like 'Freedom'. As Isia b Berlin observes" . . . like Happiness and Goodness, like nature and Reality, the meaning of this term is so porous that there is little interpretation that it seems able to resist . . .". There are, more than two hundred senses of this protean word. It would be impossible to assess all the interpretations given to the word; so for the purpose of this paper. 'Freedom' may be reflected upon, through three approaches which may seem to be alternatives. 'Freedom' as

—contrasted with necessity.

—contrasted with coercion.

—a state of Mind.

The first which involves questions of free-will and determinism is beyond the scope of this paper. The second and the third, together, seem to define my conception of 'freedom'—to be taken as complementaries rather than mutually exclusive alternatives. Freedom as a circumstance of the material world in which man lives, would form the basis for 'freedom' as a 'state' man attains, so that he is 'mukta' or 'free'.

Freedom as an entity bestowed on Man by his external environment, may be taken to mean the absence of coercion or constraint imposed upon one person by another. A man is said to be free, to the extent that he can choose his own goals or course of conduct; can choose between alternatives available to him; and is not compelled to act as he would not himself chose to act; or prevented from acting as he would otherwise have chosen to act, by the will of another man, of the State or any authority. This protestation of Man's autonomy and individual freedom finds expression in Mill's essay "On Liberty".

It is argued, by some thinkers that mere legislation ensuing freedom from coercion is not sufficient for Man's freedom—we cannot truly be said to be free to choose some preferred alternative, unless we have the means or the power to achieve it; thus the absence of means or power to do 'X' is equivalent to absence of freedom to do it. The contention that men who suffer from poverty or have a low level of 'education' cannot really be free, or that they cannot be as free as the well to do and well educated, relies on the assumption that 'to be free to do X' includes within its meaning 'to be able', 'to have the means', and 'to have the power to do X'. This forms the basis for the Marxist conception of freedom. Freedom in both these senses is subject to the conditions in which man lives. The role of the state and the society affects his freedom directly.

The other kind of 'freedom' is concerned entirely with the individual. When one man respects the other, as he would himself when he can rise above himself and look into the court of the other. When he gains enough detachment to look at things objectively. When he can rise above personal gain at the cost of a fellow being. When he can abhor exploitation of another as he abhors exploitations of himself, he is free. This state of Man is defined variously in Indian thought as 'Sthitapragya' (a man of steady intelligence), 'Trigunátíta' (a man who has overcome the three gunas—sattva rajas tames), Gy ni (an enlightened person) or Yogin (one united with God). This spirit is reverberated in Indian soil through the aéons of time, and has echoed through the philosophic perceptions of the Vedic, seers, through Bhagwadgíta and later Vedántic thought to present day philosophy in its Indian context. As Tagore says "What has impressed me deeply with the truth is that real freedom is of the mind and spirit, it can never come to us from outside. He only has freedom who ideally loves freedom himself and is glad to extend it to others. He who cares to have slaves must chain himself to them; he who builds walls to create exclusion for others builds walls across his own freedom; he who distincts freedom in others loses his moral right to it".

Within the context of this paper, then, Freedom may be taken as, one—the ensuring of absence of coercion of any kind on anybody working in or at academics; two—that state of an individual who makes himself 'mukta' or 'free'.

Freedom, as absence of coercion, is violated now and again by various factors in an academic working environment Loyalty Oaths, taken from teachers when they join service to the state, scrutiny of any academic paper before it can be published by an employee of the state indoctrination of young impressionable minds—are all forms of coercion—for coercion must be understood not only in its direct manifestation of commands in prohibition backed by sanctions or superior power, but also the many indirect forms—moulding and manipulations, or forms, of control which are indirect because they involve control by certain persons,. of the conditions that determine or affect the alternatives available to others.

For, if liberty means the right of individual choice between alternatives, then this right in turn implies that the alternatives should be known by those who are to chose; that individual have the opportunity to understand the character of available alternatives and can make a deliberate or informed choice. The freedom that members of a society enjoy will be connected, therefore, with the extent to which competing opinions, objectives, modes of behaviour, ways of living are on display, or how freely they can be examined, criticized and recommended; and thus on the ease with which men can make a deliberate choice between them.

Since 'literacy' is said to enlarge the capacity or faculty of choice and decision, it is an important precondition of the existence of freedom. Information, full, unbiased and available, extends the capacity for acting freely. Suppression as also distortion and misrepresentation or any kind of dishonest propaganda which gains its effects from privileged control over sources of publicity, may restrict the freedom of others, in so far as it succeeds in concealing and misrepresenting the character of certain of the available alternatives, it will tend to restrict or manipulate the range of choice no less effectively than direct coercion or constraint may; and thus, it will also tend to limit the exercise of freedom in a particular society. It is not sufficient to consider only the presence or absence of coercion in the more literal and direct sense. "Freedom", as Russell asserts, "in its positive aspect is the activity or process of chosing for oneself and acting on one's own initiative".

Choice can be manipulated as readily as it can be coerced. And the most important instrument for the manipulation of choice is a state controlled institutionalised system of 'education'. The content of education, both in detail and in terms of the overall pattern is heavily influenced by the prevailing ideological orthdoxy. In this context the freedom of opinion within education requires not merely the defence of threatened individuals (Academics), but also opposition to those forces which uphold and promote the subordination of education to the established ideology. Without such a struggle on the part of individuals and groups unorthodox opinions within education will always be insecure. It thereby becomes imperative that the autonomy of the academician as well as the academy be maintained at any cost.

'Academic Freedom', then may be defined as the freedom of the 'academician' within the 'academy'. It is generally considered in relation to the rights of the academicians as Mac Iver defines it—"Academic Freedom is the freedom of the men of the Academy, the faculty members, within their various areas of competence in the field of learning and teaching", i.e. the right of the academic to propagate the field of his specialisation in the way that seems best to recommend itself to him. Every major type of social organization has its own unique function which requires an appropriate range of freedom to fulfil. Mac Iver compares the college and the academy to institutions like the church or the family; he demands constitutional rights for Academic freedom. Drawing a clean distinction between the rights of a citizen and those of an Academic, he reiterates that the Academic has 'rights' over and above the 'rights' of a citizen—"what we are talking about is the freedom derived from a special function—the freedom proper to the members of a particular profession . . . just as the medical man needs a particular area of freedom for his work, or the man of law, so does the man of the academy".

That academic freedom is a derivative of a special function is acceptable. But that this function is confined within the Academy, seems to me to be questionable. Any definition which draws its boundaries around members of a faculty or academy confines the conception of Academic freedom and reduces it to privileges for the members of the Academy or Faculty. This is not justified as it would tend to protect and promote the interest of a privileged few. The justification lies in the benefits which society at large derives from it. As such any member of society whether he be a member or associate of the faculty or academy or not, but who may contribute significantly to the human experience, must be 'academically free'. As such Academic Freedom must extend beyond the Academy, else the world would lose such works as those of Vivekananda and Tagore. Mac Iver's definiion then, if it extends the scope of the term 'Academic' would be acceptable. It is the purpose rather than the profession that 'Academic Freedom' must embrace.

My attempt is not to divorce the conception of 'Academic freedom' from the Academy or Faculty but to extend it beyond. The concern for ensuring freedom for all members of the academy, whether they be teachers or students, scholars or professors, should not confine itself to these few individuals—though such concern is absolutely necessary for the Academy or faculty. Victimization of some members who may not contribute to a certain stream of accepted ideology, must be decried. Also, provision of facilities for pursuit of knowledge as desired by a potential scholar, who may not be in a position to do so due to social or economic constraints must be ensured. This is what is meant when we equate 'Freedom' with 'Means'. The academy or institution, if out of reach of any individual may hamper his work, especially if he is involved in research of the experimental kind which requires sophisticated equipment.

'Academic freedom', however, cannot be confined to accessibility and rights—though these may be necessary preconditions for it. The scholar who claims a right to propound theories must at the same time be aware of all that is being thought and expressed in his field of study. He must have a thorough knowledge of his discipline. His theory must be open to verification—to criticism and comment. Such a scholar alone can claim protection of his freedom. He may "attach accepted views and doctrines, defend rejected ones, offend the sensibilities of his colleagues (even those of superior rank or seniority), criticize the policies of his institution or state and propose and advocate changes of the law and of the constitution . . ."* All this without any risk of retribution other than counter argument and reputation. He need not fear to lose his academic post or to suffer material loss at the hands of the institution of which he is a member. But only if his theorizing is the result of an endeavour that manifests itself in a slow and steady process of preparation over time which offers him opportunity to think, analyze, test and verify conflicting theories. So far as it is enlightening rather than inciting. So long as it can stand scholarly scrutiny and be open to all those whom it may concern. A scholar who is ruthless in self-analyses of his doctrine, who is open to criticisms and questions may make his demand for academic freedom. For academic freedom is a high responsibility and obligation of those who claim access to it. It is commitment to this responsibility that would give credibility to the concept.

So also the teacher. Since he is entrusted with the impressionable minds of the students, his responsibility is extant. Though he has a 'right' to freedom of opinion and expression he must take care to expose to the young mind the various opinions in his line of progress.

Another aspect of Academic freedom is concerned with the 'rights' of students. His right to protest, his right to representation in academic and administrative activities of the academy, his right to the choice of courses of study must all be backed by a sense of responsibility. A student in any of our universities has, for his choice options and combinations of courses as prescribed by the governance of the university. What the student may chose to study is a selection of well-designed courses. How 'free' is he to chose? The protest must come—and it does against a system that has become rigid and an order that is stifling in its confines. This 'system' and 'order' justified on the grounds of homogeniety of subject matter leads to such classifications as do not allow a student to take courses in say Physics and Literature at the same time. Another 'imposition, upon the student is the teacher—he has no choice; neither has the teacher. Such a system may not be conducive to student-teacher rapport which takes care, largely, of the freedom of both the teacher and the student. This practice was prevalent, as we all know, in ancient India. The student usually went to such a teacher as attracted his attention by his reputation and scholarship. The teacher selected such students as appeared to him sincere, zealous and well behaved. The two were 'free' to leave each other as and when thought desirable. This freedom flourished on the foundation of responsibility without which it might have degenerated to licentiousness.

That Academic freedom has not, to this day been included in the constitutional spell out of the Rights of Man is attributable to the fact that, throughout the civilized world it has been a product of ethical prescription rather than that of positive law. Rights if divorced from ethical sanction and conjoined with social convention or legislative demands, free themselves from personal responsibility. For no amount of legislation or social convention can ensure that an individual would pursue only that which he considers to be the truth. It is not positive law, as Kirk says which "enjoins a man to honour his father and mother, although occasionally statute may endeavour to compel him to provide for their physical subsistence". It cannot therefore, be put in the same class as other legal rights. For into this right is inextricably woven, the concept of responsibility which attributes it with a commitment.

If Academic freedom is to mean the opportunity for students and teachers to pursue their study, "to the end that education should ever encourage that continual and fearless sifting and winnowing by which alone the truth can be found', then Academic freedom cannot remain merely a Right bestowed upon Man by Men. It must go beyond this. Academic freedom, like every other prescriptive right, has its boundaries and corresponding duties, so that it should not decline into licence. It can be prevented from this only by the individual's awareness of responsibility.

This responsibility casts restraints upon him. This self-imposed restraint is different from restraint imposed by an external authority—against which we have talked at length. This restraint is the consequence of constant-self-analysis and criticism—free of attach-

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*Statement of CAFD. Harvard Educational Review, 1965.

ments in the form of name and fame. If Academic freedom is to mean freedom for the pursuit of what ones thinks is the 'Truth', then this freedom is the consequence of pure reflective thinking; the realization of the limitations of the pursuit would cast restaints which would resist calling every 'finding' a 'Truth'. This humility is the beginning of all that an academician needs, the selfless, seeking of Truth, which will liberate him in the truest sense of the word.

Jayshree Mathur

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Book Reviews

Singh, Amrik and Sharma, G.D. (Ed.), University and College Finances: Seminar Papers, New Delhi: Association of Indian Universities, 1981, pp. 246, Rs. 50.

A three day National Seminar on University and College Finances was held at New Delhi under the auspices of the Indian Council of Social Sciences Research and the Association of Indian Universities during March, 1978. The papers presented at the seminar led to a good deal of lively deliberations. In the light of discussions which followed, quite a few of the contributors have revised their papers. And, thus, the book under review though purports to report the proceedings of the Seminar in fact represent the considered thinking of the participants.

In the 'Introduction' the editors have skilfully emphasized the crucial importance of the problem in the context of present day developments in the country. They have pointed out that public expenditure on education has increased several times during post-independence period. So much so that today, edcaution accounts for about 15 per cent of the budgetary outlay. One fourth of the total public expenditure on education is spent on higher education. It has been alleged that the agencies providing finances to higher education i.e. UGC, ICAR, CSIR and the State Governments have displayed a lack of clear perspective for human resource development optimally needed under the rapidly changing socio-economic conditions. The growth in the number of institutions of higher learning has strikingly been unsystematic. The expansion of general higher education as also of technical professional higher education has broadly and blindly followed the hackneyed model of the developed countries. The editors aptly observe that the physical facilities thus created have remained mostly under-utilized. Another important observation made by them is that there has been a steep fall in the contribution of other sources (i.e. edowments and student fees) financing higher education. They also point out that commerce and industry—the two main beneficiaries from the externalities created by the development of higher education have not been cajoled to contribute towards its cost of production. The system of grants-in-aid has primarily been based on political ad-hocism and past traditions. It has hardly taken due cognizance of economic or educational indicators. This has, thus led to the mushroom growth of half-starved, badly-equipped, and financially mismanaged institutions of higher learning which suffer from chaotic uncertainty regarding timely receipts of grants-in-aid.

Phenomenal wastage and stagnation in the higher education may significantly be attributed to the funding agencies and the criteria (if any) they follow, the conditions they attach, the time they take and the mechanism of the availability of funds. Equity consideration have been brought in the sense that institutions located in educationally backward states should receive relatively larger share of funds than those located in more advanced ones. This aspect appears to be grossly ignored by the funding agencies. Consequently the educational institutions in advanced states have developed more rapidly than those in backward states accentuating regional disparities.

A paper "Financing of Higher Education: A Socio-Political Analysis of the Basic Issues" by Kamat discusses some of the the fundamental issues in the development and financing of higher education in the historical context. Kamat has pointed out :

> The educational system of the colonial period was continued without any radical break . . . with the nation's economy in doledrums it is becoming difficult to find resources for its further growth and development. The classes which have been presiding over the destinies of education are: the industrial and trading bourgeoisie, the educated middle class entrenched in strategic positions in bureaucracy, professions and in modern industry and business, and finally the powerful rural leadership representing the middle class the rich peasantry. (p. 26).

While arguing that the course of development for higher education has neither been systematic nor dynamic, Kamat says :

> "The expansion of higher education also serves political purpose for the emergent rural leadership. A new university, a medical or engineering college, a poly technique, an agricultural college or university, in the moffussil areas are all simultaneously manifestation of and an addition to the regional political influence besides bringing educational facilities near home to their following. In this game institutions of higher education have been established without adequate planning or preparations. (pp. 27-28).

Mukherjee appears to pose a challenge to the human capital hypothesis i.e. the 'education-productivity-earnings' constrict. The issues raised by him and the arguments in their support, remain rather weak. Nevertheless, some of his conclusions at the end, though not directly emerging from his paper, are worth taking seriously.

Azad reviews the practices followed by state governments regarding grants-in-aid to colleges and stresses the need for their streamlining:

> "the system of government assistance to institutions of higher education does not follow a well conceived policy of university expansion and development. It appears to be the result of various socio-economic, political and administrative factors operating in different states. In the process diverse financial procedures and practices have come to be adopted. Since private affiliated colleges constitute a vast bulk of such institutions in India, the degree of their financial viability determines, to a very large extent, the academic standards of the entire university system" (p. 49).

Sharma in his paper "The UGC. A Critique" analyses the pattern and rate of growth of allocation of resources by UGC since its inception in 1953. It has been pointed out that the UGC's system of giving grants to the universities on the basis of matching contributions by the state goverments has accentuated the regional disparities in the development of facilities for higher education. The universities in the developed states which are already fairly developed get more grants for their development and the universities in the under-developed states could not avail of this opportunity and remained under-developed. Moreover, variations between actual expenditure and allocation of faculty improvement programme reveals that the emphasis of the UGC has been on general expansion rather than on quality improvement.

It has been pointed out that the UGC does not follow any systematic and proper policy in the allocation of funds to various colleges and universities. Sharma suggests the need for an overall restructuring of the UGC wherein emphasis should be shifted from mere funding the institutions in ad hoc way to a systematic planning for higher education and its implementation.

In a comprehensive study, Nanjundappa has studied the growth of revenue and expenditure pattern of Karnataka University for the period 1949-50 to 1972-73. He works out the cost of higher education per pupil to be Rs. 5,372 in 1972-73. Of this public cost comes to Rs. 3,242 and private cost is Rs. 2,130. He finds great variations both in the per-pupil expenditure as well as teacher-student ratio in different disciplines. He also builds a strong case for making the beneficiaries to pay the full cost and for introducing an indirect system of loans to all eligible students with the minimum standard qualifications, subject to the condition that they would repay the loan from their future earnings over a period of 20-25 years. It has been observed that the existing grants-in-aid system has resulted in absolutely unjustifiable subsidization of higher education only to the advantage of what Raj has called the "intermediate class". His suggestion for an indirect system of loans whereby no one who can benefit from higher education be deprived of the finances required for the pursuit of higher education, is simply commendable and needs more thinking. It is hoped that the proposed system is likely to serve as an inducement to invest in human resource development and that by covering full-costs it will eliminate indiscrete subsidies, ensure ploughing back of funds for investment in higher education, promote greater financial autonomy to universities and alleviate economic inequality.

Panchmukhi has studied the nature and causes of financial crisis faced by the Bombay University and envisages the unfavourable financial implications of some of the recent innovations like 10+2+3 pattern and the New Universities Act in Maharashtra so far as the Bombay University is concerned.

He observes that the flow of the grants to the University, besides being inadequate, is not properly phased. Enrolment elasticities of receipts are not found to be very high, indicating that the funds do not adequately move with the requirements of the university. The conclusions arrived at by him in respect of the Bombay University are generally applicable to almost all the State Universities. He has pointed out that the New Amendment has added further difficulties to the university finances besides coming in the way of the developmental activities and the autonomy of the University.

Faculty-wise per pupil income and expenditure pattern of the M.S. University of Baroda has been studied by Shah and Srikantiah. They have observed that the gap between the per-pupil expenditure and the per-pupil contribution is widening rapidly; that the rates of fees are nearly uniform for all institutions while the per-pupil cost varies widely between faculties! Though there is considerable subsidization at the higher level of education, the beneficiaries are mainly from those sectors of the society who have the capacity to pay more. They therefore, highlight the necessity of relating the pricing of university education to the cost. The maximum limit proposed is to equate such price to full cost. Alternatively, there could be price discrimination based on the capacity to pay and the nature of courses pursued. It has further been observed that the demand for such human capital mainly comes from industry, which itself does not participate in its development. It has therefore, been argued that industry may be made to bear a part of the cost of human resource development. They hardly suggest the machanism of such a participation. Moreover, they appear to forget that human resource development as a result of widespread educaition and training is merely one of the essential prerequisites for the growth and development of industry in an under developed economy. The corporate tax has already reached its limits. Further burden on the industry may not be desirable.

In a study on "An Inter Departmental Expenditure Analysis" Balvir Singh and Satya Paul work out major trends in the expenditure pattern of different teaching departments of the Delhi University during the period 1967-68 to 1975-76. In order to analyse patterns of expenditure and growth of departments, growth rates of expenditure for teaching and non-teaching activities are estimated. To complement this, growth rates of enrolment and teacher are also examined. The Regression and Gini Coefficients are estimated to find out: (i) Whether the expenditures in the University departments have grown in proportion to the growth in enrolment and how this growth compares among the departments, (ii) Whether the departments exploited economies of scale in their functioning, and (iii) Whether the expenses of teaching and non-teaching activities are equitably distributed among the departments.

Their rigorous analyses lead to the following three conclusions :

> (1) The departments of Budhist-studies, Modern Indian Languages, Commerce, Physics, Chemistry, Botany, Zoology, Anthropology and Law have exploited significant economies of scale in their working. This is clear from the fact that while deciding about the growth of the departments, the size of enrolment has not been made the base (2) The size of department in terms of enrolment and teacher's strength had very little say in the growth of aministrative expenses. It is other than in size which has influenced the growth of administrative expenses. (3) That no fixed norm of student-teacher ratio has been evolved to make it a base for expansion of any department. It might be proper to evolve a norm about a proper student-teacher ratio for various faculties giving due regard to the difference in the nature of subjects and equality of teaching so as to reduce inequality of student-teacher ratio in the university departments and without at the same time lowering the standard of education. (p. 143).

Ruddar Dutt lays bare some important facts by comparing the income and expenditure pattern of four major institutions of correspondence courses (i.e. those belonging to Rajasthan, Himachal Pradesh, Chandigarh and Delhi), out of 15 such institutions operating in the country. He challenges the philosophy of "correspondence education is to be self-financing". It has been pointed out that correspondence course education on full-cost tution-fee basis discriminates against students of these courses. It may, therefore, be necessary to look into the financing of correspondence courses and other informal channels of education from the point of view of equality of opportunity. In this connection, a very pertinent question i.e. regarding the development of correspondence education as an alternative technique of imparting higher education for at least some courses which are being taught in colleges and universities in a very expensive and rather wasteful manner, repeatedly comes to mind.

"Grants-in-aid to affiliated colleges" by Mhaisekar, "Financing Agriculture Education in India" by Mukerjee and "Financing & Union-State Relations" by Purohit are the other useful contributions in the book.

While going through the book one simply cannot resist the temptation of recasting the problem of university and college finances in the context of the developing country like India. The challenge of political pressures for opening new colleges and universities and upgrading those which already exist even where socio-economic and cultural needs of the region do not at all warrant it to be so, is required to be boldly met. This presupposes a comprehensive perspective plan for higher education. It is perhaps too much to expect from the funding authority to have prepared a comprehensive perspective plan while releasing funds. The Planning Commission in consultation with ministries of education, health, agriculture, labour and employment etc. could have done such an exercise more effectively. Depth studies regarding rational location of institutions of higher learning, efficient organisation of instruction therein and fuller utilization of educational infrastructure thus created, is likely to affect huge economies in financing higher education.

The book presents an absorbing reading material both for the professional and the general reader. A note on statistical Limitations Recommendations adopted by the seminar and Bibliography considerably enhance the value of the book.

Harbhajan Singh

Theodore Mills Norton and Bertell Ollman : (eds) : *Studies in Socialist Pedagogy*, Monthly Review Press, New York, 1978.

The battle for the minds of men is a continuing feature under capitalism. It comprises an element of the class struggle in every day life. In the realm of civil society where the combat takes places, it is the hegemony of the capitalist class which enables capitalism to reproduce its own conditions of existence. Bourgeois rule inaugurates an era in which consent rather than coercion gains prominence. Not that coercion or direct use of force is absent, only it is more discreet. Consequently for the perpetuation of capitalist dominance the ideological functions of the state attain primacy and bring to the fore the role of 'ideological state apparatuses'.

In his classic essay[1] Louis Althusser distinguishes between State power and State apparatus. The former is the object of 'political class struggle' and embodies the rule of 'a certain class or by an alliance between classes or class fractions'. State apparatuses constitute further domains of class struggle. They can be divided into Repressive State Apparatuses consisting of the Administration, Courts, Prisons, Police and the Army, and the Ideological State Apparatuses comprising of religious institutions, education system, the family, political system, comunications and even culture. The distinction is based on the idea that while the Repressive State Apparatuses (RSA) function primaily by violence the Ideological State Apparatuses (ISA) function primarily by ideology. From what has been said above it is evident that without controlling the ISAs it is practically impossible to maintain state power in capitalist society. And among all the ISAs the dominant one in mature capitalist societies is education. It enables the most pervasive percolation of ruling class ideology to ensure consent for the existing class relations.

Much of the recent researches in the sociology of education has been concerned with the outcome of inequality. As a result research has proliferated on how education, buttresses social inequality, unequal access to education and the organization of educational institutions. It largely ignored the significance of the content of education, the curriculum and the manner of its creation or the mode of transmission of knowledge In a sense therefore, the focus was on education as 'people-processing institution' rather than on "knowledge processing'[2]. Of late a shift is discernible in the latter direction[3]. Increasingly it is becoming evident that even the process of transmission of knowledge gives rise to disparities because of the unequal availability among students of the means of intellectual appropriation[4]. In their struggle against capitalism the working class in Europe has begun to realise that 'present-day capitalism no longer denies people access to education. But it does not allow a change in the function of education'[5]. This has led to an internal critique of the ideological function of education inlaid in the selection, organisation and transmission of knowledge and the construction of an alternative pedagogy[6]. The book under review is an effort in that direction from USA.

Any attempt to costruct a socialist pedagogy requires an understanding of the role of education in capitalist society. Accumulation is the central tendency of capitalism requiring that surplus value be produced and appropriated. This cannot be accomplished unless the relations of production are reproduced. Education under capitalism contributes substantially to this. Firstly it creates an ethos of individual achievement through the promotion of individual effort and competition. This atomisation later gets reflected in the labour-process itself where fragmentation of jobs and the breakdown of work into simple repetitive activities amounts to 'deskillization'[7]. Paradoxically education also imparts a host of diversified skills to potential incumbents of the labour force ensuring an adequate supply of skilled personnel for industries. Over and above these, education transforms existing relations among classes into general and invincible ones. Thus acceptance of the present abolishes alternatives for the future. The present becomes the only reality. A reality in which manifestations of equality in the form of access to education is construed as real equality between 'hand' and 'brain'. For in capitalist society one of the basic contradictions consist of the separation of 'culture' from 'production' or mental from manual labour[8]. In this way education functions as an incipient institutional legitimacy for the capitalist relations of production.

Counterposed to this, socialist pedagogy is faced with multiple tasks : dismantling the edifice of capitalist education process so as to reveal its ideological foundations, this is 'critique'. On the other hand it cannot abdicate its responsibility of at least beginning to assemble an alternative mode of knowledge-transmission which instead of fettering seeks to liberate man from the shackles of accumulation, this is 'reconstruction'. Socialist pedagogy encompass both these practice but in historically determinate relationship. Thus during the period of capitalist hegemony the prime task is 'critique'. This itself throws up some of the elements of an alternative. But this alternative can neither be constituted nor established then. It has to await transformation in the political sphere to enable the reconstitution of an alternative system of pedagogy.

This of course is only one way of interpreting socialist pedagogy, not the only way. Radical pedagogues like Friere have viewed socialist pedagogy as a continuous revolutionary practice : 'while only a revolutionary society can carry out this education in systematic terms, the revolutionary leaders need not take full power before they can employ the method' (p. 75). Contrasted to this is Lenin's call for radical restructuring of the education system in Russia after the Bolshevik Revolution (p. 28) or Gramsci's notion of education as 'process of adaptation' (p. 58).. Hence the search for a unitary socialist tradition could prove to be misleading. To appreciate this it is important to remember the context in which each of the thinkers were writing. For instance Gramsci's main concern was to counteract folklore and magical conceptions with a modern scientific outlook. However, with most of the classical socialist thinkers a strong commitment to a 'militant scientific attitude' (p. 43) seems to be ubiquitous.

In his introduction Norton specifies the notion of socialist pedagogy underlying the book in these words : 'Education *by* socialists, *with* students from or headed into the working masses, is education *for* socialism' (p. 11). He then goes on to spell out the four basic principles, culled from the writings of classical socialist thinkers, which form the basis of socialist pedagogy :

(1) 'As educators and socialists, we have no new principles to introduce . . . Our task is to help it (working class—A.G.) achieve theoretical consciousness of what it already knows and experiences, not to tell it that it knows nothing (p. 12).

(2) 'The task of the socialist educator, in concert with his or her students, is to advance the critical assimilation of the entire cultural heritage of world history' (p. 13-14).

(3) 'The educator must be educated . . . (which means) determining from the outset to collaborate with students in order to learn from them' (p. 15).

(4) 'Socialist theory has frequently emphasized a politics of active participation rather than one of passive representation. Such activity has been viewed as the hallmark as well as the only guarantee in practice of the principle of self determination' (p. 17).

From the above definition and principles of socialist pedagorgy the basic task of the socialist educator is to inculcate a 'critical consciousness' among his students, not excluding himself so as to be able to confront the barrage of established facts of capitalist society without succumbing to them. This involves both a dialogical mode of interaction within the class room and some involvement with socialist movements outside. The former enables a student to critically appraise his own existence while the latter may help to change it. Yet the first principle seems far too rigid to differentiate between 'class instinct' and 'class consciousness', while the proletariat can spontaneously acquire the former, 'class consciousness' does demand the intervention of other classes along with the working class.

The book deals with the Marxist—socialist practice of pedagogy in U.S.A. Besides the introduction, the book is arranged in six parts, each of them bearing some thematic unity. Part I contains extracts from the 'Classics of socialist Pedagogy' including Lenin, Mao, Gramsci and Freire. Part II is entitled 'who are we teaching?' and consists of essays on how to communicate with students from working-class back-grounds and on the changing social composition of students in U.S. higher education. Parl III comprising the major part of the book recounts experiences of actual socialist pedagogical practice. Part IV concentrates on 'Toward socialist Relations in the class room'. Part V consists of several letters written by socialist teachers on Teaching Marxism. Part VI is an extremely useful aid for socialist teachers consisting of exhaustive classified bibliographies of radical journals, newsletters, newspapers, news agencies and other teaching resources The book is a rich and varied fare in keeping with Lenin's saying that, 'You can become a communist only when you enrich your mind with a knowledge of all the treasures created by mankind' (p. 32). The review of necessity can only comment on some of the more significant articles. But for any one genuinely interested in socialist pedagogy this is required reading.

In his essay 'Campus Missionaries : The Laying on of Culture' John McDermott makes a significant attempt to place in perspective the reaction of socialist teachers in peripheral colleges. In the process he lays bare some of the structural dilemmas of higher education in the U.S. How the faculty in a small state university in the face of odds opt for nostalgia for elite Universities and consequently feel alienated from their University, its milieu and its students. In McDermott's words : 'Loyalty and affection they reserved for the graduate schools from which they had come, and they reflected this feeling in their teaching and counselling by relating only to that one student in a hundred who might go on to one of these prestigious graduate schools' (p. 91). In this way the teachers, even socialist ones, are unable to relate to the background of the students who remain unresponsive to their academic overtures. Ignorance of the history of working class struggles in the area contributed to their alienated presence and student passivity. Thus the professional role of the faculty clashed with their social commitment and transformed a radicalism to an elite preoccupation. McDermott then goes on to show how it is possible to relate to students through a close scrutiny of their cultural—historical background, thus channelising some of their apparently conservative traits toward more radical ends. As he correctly diagnoses, the culture of the University under capitalism is pacifist in nature seeking to integrate students into a national grid. Whereas the local traditions retain a rebellious urge which could unleash the initiative of working class students for far reaching change. Hence radical teachers should equip students to resist 'the laying on of culture' instead of consigning them to unwarranted apathy or integration.

Ira Shor's essay on 'The Working class goes to College' tries to show how the proliferation of two year community colleges in USA enabled the workers to enter college' from the late 1950s to the early 1970s'. These colleges performed a dual function, on the one hand it kept people out of the labour market for some time and on the other imparted certain special vocational skills which would later facilitate their absorption into industry. Transmitting 'cultural skills' which could radicalise them is different but possible if they are 'taught... to value their own experience as a source of knowledge' (p. 123).

The pervasiveness of socialist pedagogical practice is evident from the alternatives proposed in Part III in as diverse fields as 'spectator sports' to Physics, and from Economics to Literary Theory. While some of the courses are attempts to set up alternative socialist perspectives in conventional subjects like economics or literary theory, some of the others are innovative. Among them is a course on spectator sports by a teacher of literature. Earlier in our introduction we have mentioned how sports constitute one of the ISAs. Louis Kampf's course is an effort to unravel the importace and ideological function of sports in capitalist society. As he says it is important to note that : 'Modern mass spectator sports and large-scale organized recreational activities came into existence in the West—especially in England and the U.S. as the Industrial Revolution hit its full stride during the 19th century Sports and recreation were consciously used to keep working people off the street, out of trouble, and wrapped up with anything but their most vital concerns (p. 147). The course centres around the social significance of sports, its impact on sex-role differentiation, as personal escape from work, as creating an illusion of freedom and autonomy in order to impose the rules of domination.

Among all the alternative courses Ira Shor's 'No More Teacher's Dirty Looks : Conceptual Teaching from the Bottom Up' is one of the most interesting. It attempts to restore some of the critical thinking to worker students whose 'critical thinking about daily life and larger social issues is discouraged by pedagogy which mystified both philosophy and history((p. 178). The fast paced 'trivialization' of human experience in mass-society leaves no place for analytical or conceptual thinking. It transforms everything including information and knowledge into items of quick consumption. In her course on *Utopia*, Shor organizes 'consciousness—raising around methodology and ideology' so as to 'criticize conditioned habits' and 'helps . . . to decdode the seeming confusion of daily life, and to discuss new ideas' (p. 183). The first task therefore is to 'slow down the students' furious pace of perception by asking them to concentrate on a stationary object' (p. 183). From the object (usually a 'Chair') attention is then directed to describing its visual component, after which the process of its production is discussed along with its function. In this way the course develops a method of analysis in 3 steps : 1. Life Description, 2. Diagnosis and 3. Reconstruction. Thus objects of everyday life are dismantled to reveal the way in which ideology ensures the reproduction of existing social relation.

Bertell Ollman's 'On Teaching Marxism' is a course which imparts to students an overview of Marxism emphasizing on 'internal relations' which hold that the irreducible unit of reality 'is the relation and not the thing'. Ollman's series of 12 lectures cover different aspects of Marxism from the extraction of surplus value, to dialectical method, to the ideological distinction of fact and value, to the theory of alienation, theory of capitalism, state, and ideology, vision of communist society, ideas on class consciousness and Marx's method. Ollman's main goal is to have students understand 'Marxism not as intellectual history, political biography or partisan rhetoric, but as the only adequate analysis of capitalism today' (p. 247).

Sklar takes objection to the manner in which Ollman surrounds Marxism with an 'Saura' of truth and emblems of 'frozen authority'. He says that 'we study Marx's throught (like others) as a guide to our own consciousness, to the consciousness of our own epoch, and to comprehending historical reality generally (p. 262) not to await a 'True Revelation' (p. 263). He feels that setting Marxism apart or above' defeats its purpose of enabling a proper appropriation of historical reality. Marx's method must be applied to Marxism.

About the actual practice of teaching, distinct difference of opinion exist among socialist teachers. This is reflected in the articles by Rappaport, Elshtain and Harold. Rappaport basing himself on an unpublished paper by Weber and Somers advocates a more congenial and participative atmosphere in the class-room as precondition for the transmission of socialist ideas. His concern is with 'teaching methodology' or a 'Marxist theory of teaching'. According to him 'The task for a Marxist teacher, then, is not only to develop the best possible Marxist analysis but to find ways to communicate this material in a manner that takes into account a Marxist analysis of the classroom situation', for ideas . . . exist in a particular social context' (p. 278). Rappaport's basic proposition is to abolish the superordinate—subordinate relationship between teacher and student and create a sense of 'community' within the classroom which would be conducive for the transmission of socialist pedagogy. Moreover to foster good will and 'validation' among students and not exacerbate their distress, he suggests certain techniques of participation which enables students to 'feel good' and emotionally positive towards the knowledge generated in class.

On the other hand, Elshtain finds this trend of 'pop-psyche pedagogy' to be essentially manipulative and behaviouristic in approach. She considers the underlying spontaneity of Rappaport's approach to be basically unreflective and unconducive for creating an alternative epistemology to Positivism. The stress on 'feelings' undermines the creation of 'knowledge'. Since the nurturing of a critical consciousness is not a spontaneous or natural thing, she feels that the content rather than the form of teaching must have primacy in the classroom. Thus following Gramsci she says 'The task of critical theory is not and cannot be an easy, painless one. It is an effort which requires time and hard work' (p. 297). So since 'knowledge' is a mediated activity the nature of its mediation should be comprehended critically both by the students and teachers. Brent Harold in his essay on 'Beyond student—Centred Teaching' again argues for a 'counter—apprenticeship' (p. 321) which does not get entangled in spontaneity but scrupulously adheres to its critical function.

Alan Sable's essay on 'Facing some contradictions', is the only one which acknowledges the presence of the Third World. It recounts his experiences of teaching a course on 'Social change in the Domestic Third World' at an elite university (Santa Cruz campus of the University of California) and the contradictions that a white professor faces teaching minority students. It is not possible in the course of this review to detail out the manner in which it was introduced, structured and taught but which is extremely instructive and valuable. But the contradictions it has given rise to are important. The initial contradiction was how could a white sociology professor and a black South African economics colleague (who cooperated with Sable) teach a course on the Domestic Third World people (people from the Third World settled in USA) in a valid manner without distorting the plight and accomplishments of these people? This was arranged by dividing the course into two parts, the first which was instructor based and comprised mainly of lectures on different aspects of institutionalised racism, racism and capitalism, sociology of ethnic groups, was half the course. The other half was conducted by the students themselves who broke up into sections consisting of members of an ethnic group. Each of the sections were given, responsibility for a week's teaching which they had the liberty to arrange in the form of lectures, assigned readings, bringing guest speakers or cultural groups or showing films. So by reversing the teacher-student roles the structure of authority in the classroom was diluted and shared, enabling students to participate more fully in the course.

The contradictions which emerged subsequently centred around three primary issues of authority and power, academic standards and isolation and integration. The freedom given to the students, most of whom were from minority communities, at times led to confrontations between the instructor and students over differing perceptions/recognition of particular events, incidents or cultural traits. The overt sensitivity towards their cultural identity often overrode other considerations. The difference of interpretations is documented thus by Sable :

> As a Marxist, I argue the intimate connection of capitalism and racism and assert my belief that the liberation of domestic Third World people will only occur in the context of a socialist revolution participated in by all the peoples of our country. Many of the most politically conscious ethnic students are committed to non-socialist, cultural separatist positions, and these students consistently reject my analysis as a white telling blacks (or Chicanos or Asians) what to do (p. 346).

This tolerance of dissent and its forthright documentation is what distinguishes Sable's essay from the others in the volume. It is a lesson for most of us socialized into an authoritarian pattern of teacher-student relationship in India.

The contradictions about standards stem from the opportunity which the students have of expressing themselves in different forms like poetry, short stories, murals, term papers or academic lecture presentations. This makes evaluation difficult for the social science instructors. On the other hand since most of the minority students prefer other modes of expression than the term—paper they miss out on the supportive help with their writing.

The final contradiction arises from the fact that most of the students who enrol are minority students. On the other hand, 'most white students badly . . . need a course on racism and on the problems and accomplishments of the domestic Third World peoples' (p. 349).

The experience of this course raises important questions about socialist modes of analysis. What does a socialist teacher do when faced with cultural-separatist militancy? Does autonomy of students simply give rise to plurality of views or its resolution through some mode of analysis?

Since much of the book deals with courses and alternative modes of teaching or patterns of student responses, the knitty gritty of socialist padagogy, some of the fundamental issues remain unsolved. To problematize issues which have earlier in this review appeared as unproblematic, to what extent is socialist pedagogy able to constitute itself under capitalism? Does socialist pedagogy remain critical or get institutionalised into its opposite in a socialist society? Since the focus of attention has been relations within the university and even further in the classroom, it is all the more important to know how the outside world intrudes into the sphere of knowledge and cognition. For instance how exactly do class relations in society permeate into curriculum formulation? What is the role of political movements in accelerating or retarding transformations in academic institutions? While some of the authors (McDermott, Huberman, Ollman) recognise the importance of political practice for socialist pedagogy, even then it remains external to the actual knowledge producing situation in the classroom.

Even after the book is finished, these and many other questions linger. Perhaps there lies its success, for it is infectious in its disquiet. For those who do not believe in ready made formulas this may prove an exciting book!

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Anjan Ghosh

Philip G. Altbach. Student Politics : Perspectives for the Eighties. Metuchen, New Jersey, and London : The Scarecrow Press, 1981. Pp. 272.

The decline of student activism between the 1960s and mid-1970s is a theme that recurs in this book. Altbach finds this deline "dramatic" (p. 8), while Levy in his paper on contemporary Latin America says that the contrast between the 1960s and 1970s is "like day and night" (p. 186). Simiarly, Shimbori in his paper on student activism in Japan finds that Japanese students today "tend to be passive and obedient' (p. 123), while Boudon characterises student activity in France as reflecting an "overall mood of retreat and passivity" (p. 89) and Webler is of the view that the student movement in Germany has reacted to political frustration in a variety of ways such as terrorism but increasingly by withdrawal into the private sphere of experience and drugs (p. 108). In Italy, too, university students, while they continue to be alienated, are seen to lack "a mobilising utopian vision" (p. 93).

This book is an attempt to understand the changes that have overtaken student protest and political radicalism in order to assess their significance for both higher education and society in the 1980s. There is a fine analytical introduction by Altbach and studies on student politics in America by Arthur Levine and Keith R. Wilson, in France by Raymond Boudon, in Italy by Gianni Statera, in Germany by Wolff-Dietrich Webler, in Japan by Michiya Shimbori, in England by Pamela J. Yettram, in Greece by George Psacharopoulos and Andreas M. Kazamias, in Latin America by Daniel Levy, in India by N. Jayaram and in Zambia by Y.G.M. Lulat.

Altbach has noted that it is difficult to generalise about the patterns of student movement in the developed and developing countries not only because of differences in the structure of university education but also because student activism is highly contextualised. Nevertheless, it appears from this book that one of the reasons for the decline of student activism may well be the very success of the militant protests of the 1960s. Thus, for example, the reforms introduced in France by the *Loi d'orientation de l'enseignement superieur* in response to the student demonstrations of 1968, led to greater diversity and choice in the structure of higher education in France and greater access to high status employment; similarly, in Japan institutional reforms introduced after violent student unrest resolved to a great extent the contradictions and dilemmas disclosed by the student movement. Another important factor for the tendency to retreat into the political passivity has been the change in the social composition of university students together with deterioration in the economic situation of the wider society. Thus, for example, students who were earlier ready to risk participation in student demonstrations because of the wide range of employment opportunities, were found to be more insecure because of the constrition of the employment market.

Though in a sense it would seem that there has been a decline in student activism, particularly violent dissent, there is evidence to suggest that the student movement is developing a new style that is adapted to the changing socio-economic situation and the perception of political reality. Altbach notes that the Vietnam war provided a focal point of student activism in the US because it "combined a moral question with one of political expediency" (p. 29) ; but he points out that there has been a shift in the culture and orientation of students in the US with a greater emphasis on individualism or what he calls "meism" (p. 43), and greater involvement in a variety of issues both on and off campus which have local relevance and use non-violent protest. In Latin America, Levy suggests that the importance of student politics is related to the type of political regime which may accommodate to student activism or be harshly repressive. The Latin American scene may suggest on the surface a relative calm, yet student politics is active more in public than in private universities. On the whole, however, it would appear from the studies in this book that, in spite of terrorist groups, there has been a radical depoliticisation of the student movement and that the reasons for this trend are to be found not so much within the university as in the wider society

The role of ideology in student activism is extremely complex and even in a single country there are contradictory explanations. Di Bona (1973 : 135) is of the view that "in the lives of both student and leader, political ideology plays a very minor role." On the other hand, Aikara (1977) in a study of the ideological basis of student activism in Kerala found that a high proportion of students were ideologically oriented and agitated not only on academic issues but also on social, political and public issues. Though political parties have attempted to have a base in the university campus, student movements backed by the CPI or the Jan Sangh have not been very effective. This would also seem to be the case in Latin America and India, where there is a recruitment link between student activists and political leaders at the national level. Jayaram in his paper on the student movements in India notes the fragementation of the student groups and, in India as in Japan, the involvement of political parties had led to partisan politics and a continual struggle for hegemony. Thus the role of the ideological factor in the upsurge of student activism is not very clear though ideology tends to play a more or less significant role depending on the social, economic and poitical configuration of society.

This book certainly succeeds in giving us new and valuable insights into the changes that have taken place in student activism in several countries and, though the papers are of uneven quality, all are concerned with the theoretical implications of their analysis. What this book shows is that social science research in the field of student politics is on the whole better at description than at analysis and also that research in student politics has been influenced (manipulated?) by the special interests of Governments and Foundations rather than by academic or social priorities. Even aided by hindsight, the sociological explanations of student activism remain tentative and exploratory and in need of greater theoretical elaboration. At the present stage we can hardly understand the causes of the fluctuations in student radicalism and it seems doubtful if the papers in this book can provide a solid basis for policy in the eighties.

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Alfred de Souza

University and College Finances : Edited by Amrik Singh aud G. D. Sharma. Published by Association of Indian Universities, Rouse Avenue, New Delhi. First published 1981. Pages 246. Price: Hard Bound Rs. 50.00 and Paper back Rs. 45.00.

This publication is a highly illuminating exposition of financing higher education in India. It has been competently organised by the editors for the benefit of all concerned with critical issues of university and college education in this country. In its introduction the editors maintain that for an efficeient working of the institutions of education, there should be an efficient system of financing. Dilating on the three major sources of finance viz., private donors (by way of endowment), students (by way of fees), and Government (by way of grants), the editors analyse the implications of each of these sources with the observation that institutions neither function as completely independent and enlightened units nor as completely isolated ones. "Government policies and resoures of funding agencies do, in one way or another, influence their working."

The book is the outcome of a seminar on university and college finances held in Poona in 1979. It contains papers presented by various participants in the seminar. The papers are a bit disjointed in their texture and content. A.R. Kamat deals with the socio-political aspect and says that the liberal financing of higher education through government funds is a consequence of the congruence of the various dominant interests in our society in the sector of higher education. "It is true that higher education is highly susidized in most countries of the world. This is particularly so for specialized, sophisticated courses in science and technology. But in many of them this is accompanied by restrictions on enrolment such as aptitude or competence criteria."

In another paper it has been observed that educational reform cannot and should not be discussed without a national consensus on the proportion of GNP that is to be allotted for its reformation. At the same time, tying up a higher lot of resources in the quest of knowledge that serves no purpose, except the cultural relaxation of the elite, causes more problems than it resolves. G.D. Sharma points out in his paper that of the total resources of the UGC, almost one-third has gone for the maintenance of centrally supported universities and the colleges in Delhi. Giving a detailed analysis of expenditure on university education, he highlights the fact that the allocation of funds does not seem to follow the principles of equity. According to him, the present structure of UGC has not achieved the objectives for which it was established. Also, the budgeting system of the UGC as a whole does not seem to follow any systematic and proper pattern in the allocaion of funds to various institutions.

The book also contains some case studies dealing with financing of some universities. While some alternative methods of financing higher education have been discussed in some papers, it is clear that the basic malady is reflected in the fact that nearly one-third of the total outlay on education in India is spent on higher education which reaches about 10 per cent of the appropriate age-group. This means that it is mostly the children of middle and upper classes who benefit at the cost of 90 per cent of the people of this country. This is not only unjust; it also helps perpetuate gross inequalities in income and social status which are directly related to levels of education.

Expenditure on general education has been increasing while on technical education it has been reducing proportionately. There is going to be a tremendous increase in the outlay on general education during the Sixth Plan period. This is so because there are not enough jobs for them. It is now high time that we change our educational system in its entirety so that general education does not take away the larger chunk pf financial resources spent on all types of education. All higher education should be made self-financing through fees and private donations—a point made by G.D. Sharma in his paper when he says that with a view to avoid discrimination between those who have benefited from subidized education in the past and those who are in colleges now, a levy on educated persons may be imposed.

The book contains a useful bibliography.

Navin Chandra Joshi

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CORRIGENDUM

Vol. 7 *No.* 3 *Spring,* 1982. The authors, *L.S. Chandrakant, M.N.V. Nair* and *M.K. Bannerjee* are from the Indian Institute of Management, Bangalore and not from I.I.T., Madras.

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Higher Education: Kothari Commission and After

A.R. KAMAT

One of the first initiatives taken by independent India's government in education was to appoint the University Commission under the chairmanship of the famous scholar Radhakrishnan (1948-49). The idea was to build a system of higher education befitting a progressive developing nation. And yet after fifteen years, that is till the time of the appointment of the Education Commission (1964-66) under the chairmanship of D.S. Kothari, another renowned scholar, the situation in higher education had not shown much improvement. There were no doubt some significant gains e.g. establishment of "centres of excellence" like the IITs, IIMs, a number of National Science Laboratories and Institutes promoting science and technology, upgrading of many university departments thus promoting teaching and research in natural sciences, the humanities and social sciences, founding of agricultural universities, phenomenal expansion of the number of colleges of general education (in arts, science and commerce) and in their enrolment, and last but not the least the extablishment of the University Grants Commission (UGC) to help and look after higher education. But apart from the large expansion, and creation of some islands of first-rate or near-first-rate elitist institutions the general scene was one of despondency and despair because of the ills besetting and overwhelming the large majority of universities and colleges. The situation was no better than that in 1948-49, in fact it had grown worse.[1]

The ECR visualized a grand design for the renovation and re-building of the vast edifice of higher education, making a number of detailed recommendations for removing the ills and weaknesses from which it was suffering. Moreover, the secretary of the EC who was also the principal architect of the ECR was at hand for the powers that be for more than a decade afterwards to help implement these recommendations. And yet after another decade and a half the system is no better, in many respects it has further deteriorated. The ills of the system are now well known: large, often unmanageable enrolments; indifferent, apathetic students; disinterested, listless teachers of indifferent quality; teaching in a language which is either little understood (English) or where there are no or poor textbooks and almost no ancillary reading material (Indian languages); low-quality teaching (and research) and out-moded examination practices; undue foreign influence on higher education and research; gross inequality in educational opportunities; college managements which are often uncouth, overbearing and even exploitative; large-scale corruption, cheating and malpractices both in examinations and managements; unemployable outturn of graduates resulting in their massive unemployment; misbehaviour of students, campus riots and wanton vandalism; etc., etc.

These shortcomings and critical issues of higher education have been pinpointed throughout the post-independence period by many educational researchers including the present author.[2] Evidently the ECR recommendations also have not positively affected the growing malaise pervading the system. The educational establishment either did not want to or could not implement them. Perhaps many of them were just not workable in the present socio-political and socio-economic milieu. This paper is an attempt to review the ECR recommendations critically and indicate how far they were actually implemented. Fortunately for a part of the ensuing discussion we can draw upon the views of the author of the ECR himself.[3] As the number of recommendations made by the ECR is quite large we shall only select the most important amongst them bearing on regulation of numbers, improvement of quality, equity and social justice, and toning up of management and administration. They are:[4]

(1) Educational pattern or structure (or 10+2+3 scheme).

(2) Selective admissions and other measures conducive to control of admissions such as (i) giving higher priority to primary and elementary education and to that extent reduce the expansion of higher education, (ii) corresponding control on the opening of new universities and colleges, and (iii) relating admissions to estimated manpower requirements.

(3) Medium of instruction, in particular a systematic, rapid change-over to Indian languages.

(4) Pace-setting institutions: major universities, (clusters of) advanced centres and autonomous colleges.

(5) Additional content in higher education e.g. (i) relating the present to the past, study of Indian tradition, history of the freedom movement, etc., and (ii) work experience and national social service (NSS).

(6) Equity measures, and in particular (i) the common school idea, (ii) direct special aid by way of freeships, scholarships, etc., to the weaker sections—women, the Scheduled Castes (SC) and Scheduled Tribes (ST), etc,

(7) Improvements in management and administration by recognizing and practising university autonomy and by enacting appropriate legislations such as Education Acts by States and University Acts.

In terms of the four objectives mentioned in the previous para many of these recommendations had more than one objectives. For instance (1) aimed at both control of numbers and consequent toning up of quality, as well as for a nationwide uniformity of structure. Recommendations under (2) were mainly directed towards regulation of numbers but parts of them had also considerations of equity and improvement in management. Those under (3), (4) and (5) were meant primarily to improve the quality of higher education although (3) has also an element of equity in it. Recommendations under (6) have the objective of fostering equality of opportunity and social justice or at least mitigating somewhat the present inequitous lack of it. Finally, (7) were essentially for toning up management and administration although the element of university autonomy had also the aim of encouraging fearless independent thinking and thus enhancing the quality of teaching, research and administration. In the following sections we shall consider them indicating what has been their fate in actual implementation under the four heads mentioned above.

Regulation of Numbers

As a prelude to the consideration of the 10+2+3 recommendation it should be remembered that different structures prevailed in different States in India with 10 or 11 years of schooling upto the Secondary School Certificate (SSC) although the degree course except in a few universities (e.g. University of Delhi) was uniformly of four years duration. (It should be mentioned in passing that this reform, particularly the three-year degree course, has been on the agenda for at least the last sixty years ever since the Calcutta University Commission's report of 1919 and was also endorsed by the Radhakrishnan Commission's report of 1949.) The idea in recommending the structure of 10+2+3, that is ten years of schooling upto the completion of Secondary School Certificate, two more years upto the Higher Secondary Certificate (HSC) and a three-year degree course was to: (a) have a uniform structure throughout India, (b) introduce the higher secondary stage of two years with a hope of diversifying it with vocational and technical courses of terminal character so that the greater bulk of the HSC holders leaves education and starts working life at that stage, and (c) upgrade the three year degree course which will now have a fewer and academically better-equipped students. Although this was the one recommendation which was perhaps the most discussed and most highlighted, the expected uniform pattern did not come into force all over India. States which already had 15-year (11+4) degree course mostly accepted it but those which had 14-year (10+4) degree course did not[5]! The expectation (b) was also not fulfilled to the desired extent because the vocationalization of the +2 stage with terminal courses has not materialized except to some modest extent in a few States like Karnataka. Nor has the expected upgrading occurred except in formal syllabus content in most universities. The reduction in enrolment in the 3-year degree stage did take place in States which had adopted the new pattern but not to the desired extent because channelization to middle-level employment has not taken place as terminal vocational courses were not introduced at the higher secondary stage. The reduction occurred mainly because of the interposition of two hurdles of examination (SSC and HSC) instead of one before the student was eligible to enter the degree course. And these hurdles adversely affected students mostly from the backward regions (e.g. Vidarbha and Marathwada in Maharashtra) and weaker sections—girls, SC and ST and other backwards. This is evident for instance from the SSC and HSC results in Maharashtra during the last few years.

The recommendation about selective admissions was to check the run-away expansion of higher education by restricting admissions so as to strike a balance between output and manpower requirements. The EC had in fact made it conditional on the introduction of terminal courses on a wide scale at the higher secondary stage, making the necessary financial provisions for really talented but poor students, selecting students according to school clusters rather than on the overall muster of the candidates taking the HSC examination, and special facilities for the weaker sections. But even this mild and conditional recommendation was promptly negated by the Parliamentary Committee (1968) which deliberated on the recommendations of the EC. The Committee observed that all those who are eligible (meaning those who simply pass the SSC and HSC examinations) should be admitted to the degree-courses if they so desire!

The proposal recommending higher priority for elementary education thus reducing the relative expansion of higher education was not rejected outright as the one on selective admission. But in practice the expansion of education is going on more or less on the same lines as before *viz* enrolment grows the highest at the stage of higher education, the next highest at the secondary stage and the lowest at the primary and elementary stage. This means that there is no effective check on numbers in higher educational institutions through academic measures, whatever slowing down that may be occurring being only due to the rising costs of higher education, restrictions on opening new colleges and, as pointed out above, because of the two examination hurdles instead of one in the new structure of 10+2+3.

Another post-EC development in this respect is the proposal for increasing fees substantially for courses in higher education, particularly for those courses where the course leads to a remunerative professional career. (This proposal was not made by the EC which in fact took a rather liberal attitude towards fees.[6]) The proposal appeals to the cost-benefit principle and as usual also bolsters itself by suggesting provision of scholarships, freeships and loan-scholarships for those deserving students who are indigent. Such a proposal will be difficult to operate both on grounds of theory and practice; because in addition to the likelihood of hurting lower middle class students even logically it should lead to a sliding scale of fees according to income slabs, a policy which is difficult to operate. Even otherwise it is hardly likely to be accepted.

Quality Improvement

Let us now take up the EC recommendations for the improvement of quality starting with the proposal to adopt Indian regional languages as media of instruction, examination and creative original work. It should be mentioned that already by the time of the institution of the EC, because of the force of numbers of SSC holders ill-equipped in English several universities had to yield permissive recognition to the regional language in higher education. In some non-metropolitan universities, particularly those with an extensive hinterland of rural colleges, this transition had already taken place to a considerable extent. In some of them some 90 per cent of the students in the humanities and social sciences had opted out for learning and taking examination via the regional languages. So in a sense the EC was putting its seal of approval on what was or had been already taking place for a long time. The EC recommended that regional languages be adopted as media of instruction and examination, the transition being accomplished in a systematic manner, with due preparation of quality textbooks and ancillary reading material and retention of a good knowledge of English as the library language. It recommended that the transition take place in ten years and that adequate provision be made for the non-regional language students getting instruction in English; also that simultaneously the States should adopt the regional languages as official languages and consider those educated in the regional media equally qualified for government jobs at all levels. This was one recommendation which was received most enthusiastically by the Parliamentary Committee, and being dominated by the Hindi-speakers, so enthusiastically, that they even reduced the period for its implementation from ten to five years.

What is the situation now after fifteen years? Regional languages are used as media by an overwhelming majority of students except in the metropolitan universities and in most courses except in science and professional, technical courses. At the same time English-medium schools and elitist institutions of higher education offering instruction in English are also proliferating. This is because English is still the *de facto* official language for most purposes of higher-echelon jobs in the government and political economy; all prestigeous and high-salaried jobs go to those who have received their education in that medium. English, particularly ability to speak it fluently and write drafts in it, is still the hallmark of all academic competence. So we have the strange spectacle of a simultaneous process of mass devaluation (or deprivation) and elitist glorification of the English language. As we have remarked elsewhere the British rulers have departed leaving their language to rule over us.[7]

This has strengthened the dual structure of our educational system where a small elitist minority is taught in the English language in selective institutions and the large majority receives a low-standard education in regional languages often in sub-standard institutions. Their instruction suffers from the use of slipshod textbooks hurridly written, often by low-grade authors, in regional languages and with almost no access to the desirable extra reading material which is mostly in English. Moreover, the graduate who passes in this manner is not only ill-equipped in the subjects which he is supposed to have studied and in his knowledge of English, but the knowledge of his own regional language is so deficient that he cannot compose even a small piece correctly and elegantly in it.

The second set of recommendations for the improvement of quality was the establishment of pace-setting institutions like major universities, clusters of advanced centres in universities and autonomous colleges. Here the idea was to establish (or build up old) institutions where adequately ample provision is made in the matter of competent staff, liberal library and other academic facilities and selectively admitted talented students. For this purpose the EC had visualized the establishment of four or five major universities in India where the cream of the Indian intellectuals will be brought together so as to acquire a "critical mass" which will launch on a career of brilliant academic work comparable to the outstanding centres of excellence in the (Western) world. We had criticized it at the time pointing out how this proposal, if successfully operated, will denude the other more modest centres of learning of most of its outstanding intellectuals reducing them to intellectual penury.[8] This, we had suggested, will create islands of affluence always looking towards the West rather than producing creative indigenous work. It will be widening immensely the present gulf between a small number of good institutions and the large mass of mediocre or even substandard ones and likened it to production of skyscrapers along with slums.

The EC also sponsored the idea of forming clusters of advanced centres (which had already been started by the UGC in several universities and research institutions) for the same purpose. Another proposal of a similar character was that of raising some selected colleges to the status of autonomous colleges which can plan their own teaching (including their syllabi) and assessment which will qualify the successful students automatically for the university degrees.

What was the outcome of these proposals for establishing pace-setters in the Indian academic world? The proposal of the major universities faced intense adverse criticism and was not acceptable. There are no major universities unless you describe the JNU and two other Central Universities recently established in Bangalore and Hyderabad as filling the bill. In terms of funds and other facilities they certainly look like attractive or promisingly attractive centres in the academic India. The advanced centres have flowered liberally in many universities but we have not heard of their clusters and their academic output is not always of a very high standard. And so far as autonomous colleges are concerned in spite of much talk over a long time they have not come into existence except a few in Tamil Nadu.

This leaves us from our list with the recommendation of strengthening the indigeneity of the content of higher education by including in it the roots of our civilization and history and exposing it to actual life by introducing work experience and national social service. These proposals were not unacceptable; in fact they were hailed with applause in many quarters. But their actual implementation is extremely uneven; very often they are more honoured in phrase than in practice. As regards the first, for instance, a few universities were bold enough to introduce science and civilization as a theme with a commendable content in their first year syllabus of the degree course. (How far it is effective in fulfilling the desired objective perhaps needs evaluation.) As far as work experience is concerned it is my impression that there is hardly any beginning anywhere and as regards the NSS it has been adopted in some universities but in its actual practice it often becomes only an annual ritual. Perhaps a much more authentic account in both these respects can be available from those who are supposed to monitor these innovative developments.

Equity Measures

Here the main planks on which the ECR recommendations stood were the common school system and the idea of the neighbourhood school.[9] These meant that at the school stage all children in the neighbourhood should go to a common school irrespective of religion, caste, sex, income or social status. The EC was of the view that this reform will bring about the necessary mixing of children from all social sections and that this will be for the ultimate good for the indigent children obviously because it will provide them with good education, and for the affluent children because it will make them rub shoulders with children from the lowlier sections of society thus contributing towards social and therefore national integration. Clearly, according to the EC the reform, if enforced, would be a long step towards not only equal opportunity but also social equity. This change was to be brought about in a period of twenty years, to initiate it first at the lower elementary stage and to extend it later to the upper stage. Essentially it meant the gradual fading out of all private effort in primary and secondary schools and, as a natural corollary, the discontinuance of the so-called 'public' schools or exclusive English-medium schools catering for the affluent top-crust of society. Although the EC proposal was for the school stage it has clear implications for higher education since students at that stage, the EC hoped, would have been already imbued with egalitarian values in school. There was also the implication that the elitist institutions in higher education will also fade out except for the 'centres of excellence' advocated by the EC.

Additionally of course children of the weaker sections (women, SC, ST and other socially backward segments) will be provided with liberal financial aid so that their education did not suffer for lack of adequate financial support. In fact the EC went a step further because it visualized that in due course such measures will have to cover not only specific social segments but in fact all those who are economically or socially deprived or depressed.

The common school system and the neighbourhood school proposal had raised a controversy in the EC itself and it did evoke a much fiercer one in the Parliamentary Committee and later at the stage of the drafting of educational policy. The Parliamentary Committee approved of the neighbourhood school proposal by a majority vote but at the drafting stage the proposal adopted was a very general, colourless endorsement of the idea without the necessary commitment. As the architect of the ECR later ruefully remarked "For all practical purposes, therefore, this proposal has remained a dead letter. ..."[10] This was therefore the end of the beginning towards equity (as visualized by the EC). The facilities for the weaker sections prevailing at the time have of course continued but there has been not much of an attempt to extend them to all economically and socially indigent or weaker sections. (The latest trends in this respect are pointed out later.)

Management and Administration

In the improvement of management and administration of the universities, colleges and other institutions of higher education the basic principle emphasized by the EC, and rightly so, was autonomy. This emphasis on autonomy was clearly a reflection of the inordinate influence including interference of the government (which is the major donor body) and the politicians' cliques in the management of the universities and that of private individuals or groups in the management of colleges and other institutions, the bulk of the latter being under private management. The idea was that a university should be free to decide its working and programmes subject to public accountability and the generally expected awareness of the social good, that is, working for the material and cultural advance of society. Moreover, this autonomy should be not only the privilege of its highest academic body or bodies which conduct the university but should also be a decentralized one reaching down to its departments and to colleges, and to their members of staff. The government who is the principal donor and non-academic members of private management (of colleges) have to respect this autonomy of the world of academe while the latter on their part have to display a sense of responsibility, social commitment, fairness and efficiency in the discharge of their functions.

There were further proposals by the EC to further the improvement of management and administration of institutions of higher education. The first was that every State was expected to legislate an Education Act for the State which was to cover all levels of education and therefore higher education as well. Besides it was expected that there will be an Act for every statutory university which will be based on the principles of academic autonomy and public accountability.

Since these general principles are not controversial in theory the real rub lies in practice. In pursuance of this recommendation the UGC also prepared a draft University Act to serve as a model while enacting legislations for universities. Some States like Maharashtra have also proposed more or less uniform Acts for all similarly placed universities in the State. It cannot be said, however, that much improvement, even any improvement, has followed the EC recommendations in this respect. Or has it? And the recent legislation for the AMU appears to be clearly a retrograde measure.

How far did all these ECR recommendations upgrade the higher education in India? Instead of going into details and giving our own conclusions or impressions we shall at this stage only summarize what the author of the ECR has himself said about the state of higher education a decade and half after the ECR.[11] "It will be seen that, throughout the period under review, the basic policies adopted early in the post-independence period continued to hold sway with some minor modifications." ... "the main recommendations of the Commission which could have made some difference were either thrown out ... or were being indifferently implemented ..." It is not surprising that "the crisis in higher education still continues: over-production of 'educated' persons: increasing educated unemployment; weakening of student motivation, increasing unrest and indiscipline on the campuses; frequent collapse of administration; deterioration of standards; and above all, the demoralizing effect of irrelevance and purposelessness of most of what is being done."[12]

A Critique

In this section we shall attempt a critique of the ECR recommendations enlisted and considered above, and of the fate which has overtaken them. We shall first briefly deal with them individually and then take a general synoptic view.

First, the new structure 10+2+3 could not be enforced in all States because, those which did not accept it had traditionally a 14-year degree course. So besides inertia and the requirement of a larger expenditure for a longer course, in a country where the government and semi-government bureaucracy is the main and on the whole the more respectable avenue for employment, the 14-year-wallahs have an obvious edge over the 15-year-wallahs because of the age-stipulation for most jobs. A uniform pattern all over the country and a possible upgrading of the degree course are no substitutes for economic gain, bringing out once again the obvious truth that higher education is sought not so much for knowledge as for securing a degree certificate as a passport for jobs. The +2 stage, even if it were adequately vocationalized, would not have solved the problem of educated unemployment for the simple reason that the slow economic growth is not creating enough jobs whether at the middle level or at the degree level. We have also seen above how even a well-intentioned programme for a possible improvement of quality and reduction in the numbers of aspirants for degree-level education usually hits hard the weaker segments of society.

The proposal for selective admissions including changing the priorities between primary and higher education was not acceptable because it is the relatively better-off sections who can reach and desire higher education and it is they who are both economically and politically the most influential sections of society. Again the proposal would also be opposed by the lower segments of social hierarchy who are also aspiring to enter the portals of higher education to improve their economic condition and social status. Selective admissions would affect them adversely. This was also pointed out by Professor D.R. Gadgil.[13] Moreover, restriction on numbers would have been a risky policy for politicians.

The proposal about encouraging regional media and discouraging English ran into difficulties mainly because (i) English still rules all the opportunities of jobs with higher prospects and prestige, and (ii) the ruling elite whether in industry, business, politics or academics is English-educated and finds the intended transition an arduous and therefore an unrewarding, thankless task. The 'progress' achieved so far in this direction is mainly due to the democratization of politics enabling the rural elite to positions of power. The further progress relegating English to its appropriate secondary place in national academic life has to await further democratization, taking economic and political power to social segments further down the socio-economic hierarchy.

The proposal about pace-setting institutions *viz* major universities and autonomous colleges failed mainly because of the internecine rivalry between States and between institutions. Moreover it would have officially branded other institutions as minor or inferior.

The recommendations about additional contents in higher education sought to be introduced in the form of (i) courses in history, and science and civilization, and (ii) work experience and NSS, could not go much beyond lip sympathy for the simple reason that under the reigning umbrella of a purely money-motivated philosophy it is only the technical-professional skills or degrees which become the central purpose of higher education. Cultural enhancement or the motive of serving society can hardly find a place here. In other words the objective in acquiring higher education is simply improving one's earning capacity and not his culture, and who cares for social service anyway?

The common school and the neighbourhood school ideas will always be non-starters in our highly divided and highly unequal society. It will not be possible to eliminate 'public' and public-type English-medium schools for the same reason. Even the judiciary has given protection to these elitist institutions under the relevant clause of the Constitution (which can be used like the clause recognizing the right to private property) blocking all egalitarian measures. The privileges bequeathed to the weaker sections like the SC, ST, etc., have not been affected so far but the Marathwada and Gujarat holocausts underline the harsh winds blowing in the reverse direction to undo them.

Suggested measures aimed at improvement in management and administration including the Model Act and uniform legislations have not toned them up. On the contrary if one looks at the all-India situation the conditions have deteriorated. Actually a university, (college or any institution of higher education) has to be a joint collective academic venture of teachers, students and non-academic employees to be a really autonomous academic institution. What is happening at many places is just the opposite and a complete travesty of the principle of autonomy as is clear from the reported situation in universities in Bihar and Madhya Pradesh.[14] Some of the suburban colleges in Maharashtra (which is often described as an educationally progressive State) can only be described as cesspools of all kinds of malpractices and maladministration.

In sum only such of the recommendations were implemented which would help to support or strengthen the larger socio-economic system and its structure. Others were either rejected out of hand or were accepted formally for populist reasons without any effort or intention of implementing them.

Conclusion

Finally, let us ask ourselves the questions: What was wrong with the ECR recommendations? Why were they ignored or unimplemented? Inspite of the grand design and meticulous attention to all things and every detail (or perhaps because of it) the ECR and its recommendations formulated a set of idealized, and yet seemingly pragmatically-oriented, ad hoc proposals. They visualized this formidable edifice irrespective of the society in which they were wanting to erect it. There was a clear, irreconciliable dichotomy between this dream-product and the actual reality of our society. For instance can one think of an equitous educational structure, in a wholly inequitous society like ours? Can we expect a clean and autonomous management of educational institutions in the surrounding vast sea of corruption, malpractices, and authoritarian individual and social pressures? Can one project improvement of quality and devotion to social service in the educational institutions when in the actual public life there is devaluation of quality and where the grabbers grab as much as they can by means fair or foul and are yet acclaimed successful persons? What the EC forgot (and *the* author of the ECR has admitted the wrong premise with which they started.[15]) was that the educational system cannot be a prime mover in the process of social transformation and cannot rise up much above the society in which it is functioning. We have pointed out this socio-educational fallacy in several of our writings before and have also referred to it while monitoring the change occurring in Naik's own thinking in the last decade in a recent article on him.[16]

Even otherwise, that is, in themselves, the ECR recommendations do not look like a consistent, coherant set. One can see this in the manner in which they borrow and put together everything that they thought was good or desirable from other (and mostly) advanced, developed affluent countries including the USSR. Such an hold-all approach can look magnificent in words but cannot be even a consistent utopia, even while it makes frequent references to the situation on the ground and uses the indigenous details including the native idiom. A consistent educational utopia must first spell out the socio-economic and socio-political utopia in which it is supposed to stand. It involves the conceptualization of the desirable society of the future, the possible process of reaching from the wretched present to the visualized glorious future, and the social forces which will mount a struggle to achieve the desirable society along with its enabling sub-systems including the educational system.

This does not mean that short of the struggle for social transformation, for social liberation, one cannot suggest any reforms in the present educational system, in the present developing situation. But even such reforms and the efforts to bring them about largely depend on the vision of the future. It is not impossible to propose such interim changes in the present educational system but this is hardly the occasion and the place, to do so.

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9. ECA, *op.cit.,* Chapter 6, pp. 77–80.
10. ECA, *op.cit.,* Chapter 6, p. 79.
11. ECA, *op. cit.,* Chapter 9, pp. 162-163.

12. It is indeed sad to see this dismal commentary by one who was at heart never a pessimist throughout his life until perhaps during a short period before his passing away.
13. D.R. Gadgil, *op. cit.*, (see fn. 8).
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Social Science Research and the Institutes*

P.C. JOSHI

Research workers in research institutes have the obligation to define their research interests and to formulate their research proposals from year to year. They are also accountable to funding agencies for taking stock of progress of work on their research assignments twice or thrice during the year.[1] But they also owe it to themselves, to their commitment to their vocation and to the society to which they belong to review the content and direction of their research activities from time to time in more fundamental terms. Such a review has to be attempted not under pressure from any external agency. It has to be undertaken in response to the inner compulsions of social science vocation itself which demands unrelenting self-appraisal from social scientists both individually and collectively.[2] The need for making these observations is felt in view of the growing habit of viewing the problem of research institutes largely in terms of brick and mortar, rupees and dollars, computers and calculators, peons and steno-typists, or visits of scholars to seminars and conferences. If an excessively managerial or technocratic approach to social science research prevails to the point of neglecting the intellectual and moral questions, it is bound to corrode the creative potential of research institutes from within.

The need for self-introspection is much greater in countries like India where the formation of a self-reliant and self-conscious social science community is still in its early stages. It would be wrong to treat the vast expansion of the size of the social science community as an index of the quality of its performance. Under existing conditions, there is great danger of social science research merely following the winds of change in intellectual interests and fashions in the developed countries. To resist being merely initiative and to strive to be innovative and responsive to the social needs and problems of ones own society would, therefore, require a high level of social consciousness and vigilance from social scientists of under-developed countries.

There is also the danger of social science research merely following the winds of political change and thus becoming a victim of political romanticism or of various varieties of populism. This danger can be averted only if the rules of the scientific game and the rigour of professional conduct are stoutly defended and enforced by the social science community. This is not an easy task in our times which do not favour calm reflection and detachment and which put a premium on prompt action and quick results. Exercises in self-evaluation are perhaps far more important for research institutes which have yet no deep academic moorings nor do they have readymade norms and precedents to guide them in their growth and evolution.

In the above background, the focus in this note is on some basic issues of social science research and on the challenges facing the social science research worker in research institutes in India.[3] A reappraisal of the role and contribution of research workers in research institutes has been attempted here in terms of their relationship to (i) the University system, (ii) the policymaking bodies, and (iii) the wider society.

Universities Vis-a-vis Research Institutes: Relationship

Any discussion on the specific role of research institutes in social science research must proceed from the basic premise of the complementarity between universities and research institutes in the pursuit of common aims and objectives. Both types of institutions are wedded to the pursuit of scientific enquiry into the problems of human societies belonging to divergent geographical and cultural settings and at different stages of socio-economic evolution. Scholars working in both types of institutions have to draw on the common stock of accumulated knowledge including approaches and theories, concepts and techniques. It would be wrong, therefore, to adopt any insular view either of the universities or of the research institutes as self-sufficient entities. If the organic relation between the universities and research institutes is not continuously reaffirmed and reinforced through mutual interaction and give-and-take between scholars and research workers working in each type of institution, there is danger of intellectual inertia and ossification in both types of institutions.

How to ensure positive interaction between universities and research institutes is perhaps one of the most vital questions facing both universities and research institutes in the current phase. There is great need for universities not only to internalise and assimilate the empirical knowledge about Indian economy and society which has been generated in the research institutes. It has also become imperative for research institutes to reforge their links with the university system. Research workers have to cope with the task of assimilating the developments in the field of social science thought and theory if they wish to grapple effectively with new problems being thrown up by a changing society. For this purpose, they must reforge their link with teaching which is one of the best ways of keeping track with growing knowledge. Moreover, without some link with teaching and with the student community, research institutes cannot ensure the flow of new talent into the profession of social science research.

This concept of collaboration between research institutes and universities thus contradicts the conventional and compartmentalised view of universities as centres of teaching and individualised pursuit of basic knowledge and of research institutes as centres of organised research of an applied kind. Such a concept would also contradict the view of universities dedicated to pursuit of knowledge for its own sake and of research institutes having the explicit aim of assisting rational policy formulation and its implementation. In other words, to emphasise the organic relation between research activities of research institutes and the scholarly pursuits of universities is to emphasise the organic relation between light-bearing and fruit-bearing, the fundamental and applied, aspects of scientific research.

Areas of Distinct

It is important to keep in mind the special circumstances which give rise to research institutes as distinct from universities not only in India but also in other parts of the world. The founders of research institutes were mostly dynamic individuals from universities who found the university system full of serious constraints for conducting problem-oriented, empirical research. Such research required a solid infrastructure supporting large-scale statistical surveys, collection of primary and/or secondary data and its computation and analysis. Such constraints arose partly because teaching did not leave scholars with enough time for research work and partly because the university system was not able to set apart substantial funds for creating the infrastructure for empirical research. Both the constraints of time and funds, therefore, set sharp limits to such research activities within the universities as were required for aiding an ambitious programme of economic development and social change in India after independence.[4] The very *raison d'tre* of research institutes was provided by their role as new types of institutions where research workers were emancipated from the day to day burden of routine teaching and were allowed to pursue research activities on a whole-time basis. Substantial funds were placed at their disposal by different governmental agencies for employing investigators for field work, technically competent research assistants for computation and teams of competent specialists for coping with analytical work[5].

Some research institutes took the lead and acted as pioneers in another direction. It may be noted that, despite their basic commitment to the principle of unity of knowledge, the very organisation of universities perpetuated in practice the compartmentalisation rather than the integration of knowledge. In most universities, teaching was conducted through departments exclusively devoted to a particular discipline. Further, the contact of scholars from one discipline with scholars in other disciplines was very limited and, in fact, scholars zealously guarded the boundaries of their discipline from encroachments by other disciplines. This widening gulf between the various branches of knowledge was not suited to the requirements of an under-developed, a predominantly agrarian, country where the basic problems were at once economic, social, cultural, political, geographical, etc. Excessive compartmentalisation, therefore, created a situation when, as aptly put by Lewis, the most fertile and promising areas from the point of view of creative work were reduced into no-man's land between different disciplines.

It must be recognised that some research institutes were able to identify and tap some part of this no-man's land either by making economists themselves to adopt a wider approach or in some cases by creating inter-disciplinary teams of research workers for the study of vital problems of Indian economy and society. The perceptive elements among scholars soon realised that problems do not recognise academic frontiers created by purists within each discipline. Problem-oriented, empirical research, therefore, favoured bridge-building between different disciplines as against routinised teaching which was based on and which perpetuated academic compartmentalisation. It must be said to the credit of research institutes that they initiated the process of contact and dialogue between scholars belonging to different disciplines and interested in the study of common problems. They strenthened thereby the impulses in the direction of reaffirmation of the integral nature of social science. It must be recognised that in this task they were encouraged and aided by some distinguished social scientists within the university system itself.

It is also to be noted that even when some scholars in the university system were induced to shift to the study of practical problems, their studies did not start from the explicit premise of assisting policy making. A more direct link with policy questions and with policy-making processes came to distinguish the research institutes from the universities right from the very inception of research institutes. This circumstance brought the scholars in the research institutes in much more direct contact with policy issues as well as with policy-makers and administrators than was possible in the case of universities which maintained a certain distance from governmental agencies.

Further, the question was seldom asked in a university whether what it was doing had any usefulness for policy purposes. But in the research institutes, the question was always posed as to what relevance their research activities had for coping with the basic problems facing the country. Further, while in the universities, the best scholars were bothered much more about seeking recognition from the international academic community, research workers in research institutes, in addition, sought legitimacy in terms of usefulness of their work for policy. In fact, the source of national and international recognition accorded to some research institutes lay primarily in their contribution to studies useful for national planning. For instance, in the first round, the Indian Statistical Institute, the Gokhale Institute of Politics and Economics and the Institute of Economic Growth, were perhaps, the three institutes which came into existence not just for the pursuit of knowledge for its own sake but with the explicit objective of applying available knowledge to the understanding of the problems of India's economic and social backwardness and to their solution.

Dynamic individuals like P.C. Mahalanobis, D.R. Gadgil, and V.K.R.V. Rao, who founded these institutes were able to attract a large number of gifted social scientists from various universities in India and abroad. The problems of planned development and change facing India after its independence provided the central focus for the work of these institutes. In the second round, many more research centres at State levels were formed under the initiative of some leading social scientists who thought of providing a corrective to the concentration of the infrastructure for social science research in Delhi and other metropolitan centres. New Institutes were set up by V.K.R.V. Rao, K.N. Raj and others in places far away from the metropolis with the specific aim of studying the problems of relatively less developed regional economies and societies and of formulating strategies and programmes for promoting growth in these regions. It should be noted that the emergence of a chain of research institutes both in the first and the second was not entirely a spontaneous process; it was also a result of the conscious push provided by central and state governments to the building up of research institutes with a view to assisting policy-making in the context of planning and development.

New Challenges and Opportunities

At the present stage, it has become absolutely necessary to recognise the new problems and challenges which have opened up for social science research, fresh prospects and opportunities for growth and development. It has also become imperative to recognise the constraints, both internal to the research institutes and external to them, which, if not neutralised in time, may thwart the realisation of these new possibilities and opportunities.

Among the constraints internal to research institutes, the most serious is that the research workers specialising in research institutes on specific problems over a long period of time may not have the opportunity or inclination to keep in touch with the mainstream of knowledge. As a result of the divorce from teaching, there arises loss of contact with the developments in one's own discipline in particular and the developments within the social science as a whole in general. It must be emphasised that a widening gulf between basic knowledge and problem-oriented research, between fundamental social science and applied social science, is bound to become self-destructive. The cross-fertilisation between basic social science and applied social science or, to put the same in institutional terms, between universities and research institutes, is thus an essential condition both for the development of basic research and applied research. In other words, teaching divorced from research is as stultifying as research divorced from teaching.

In research institutes, emphasis is generally laid on the principle of expertise on a particular problem for a particular scholar. Beyond a point, however, expertise on a particular problem cannot grow without improving ones grasp of thought and theory on the one hand and broader knowledge of economy and society as a whole on the other.

The insufficient appreciation of the organic relation between studying a problem and continuously improving ones command over relevant theory and tools may turn into a serious constraint on the further development of social science research in research institutes. The problem-oriented studies initiated in the first stage as fact-finding surveys on different aspects of economy and society have now to be utilised as building blocks for construction of authentic empirical knowledge of the structure of Indian economy and society and its dynamics on a long-term basis. For this task improving the philosophical background and raising the theoretical and technical level of the research workers must be given pride of place in the research institutes in the coming years. This cannot be achieved without tapping in a big way the theoretical expertise available within the university system in India and abroad.

These internal constraints cannot be overcome without overcoming the external or the institutional constraints. It may be noted that most research institutes derive their funds from various ministries of the government who have sometimes their own ideas of priorities for research in terms of policy priorities. Funds are thus tied to specific projects or problem areas which are time-bound. This has an inherent tendency to reduce research centres or institutes into mere servicing organisations of the government departments. If this did not actually happen in the past, it was because of the wholesome influence of academic elements within the government sector itself. Further, there is an inherent obligation on the part of research centres to submit quarterly, half-yearly or yearly progress reports to funding bodies and sometimes to mechanically adhere to the time schedule. This does not leave the research worker free with much spare time for self-cultivation and explosure to new trends of thought in one's own discipline or in social science as a whole. A devoted research worker wholly loyal to the time schedule year after year is, therefore, soon bound to regress into a second class research worker who is using yesterday's methods and concepts towards grappling with very complicated problems of today. This results in a situation when even a good research worker, after some years of devoted work, begins to find that the sources of his inspiration and creativity are drying up and he is just functioning mechanically.

There is need in this background to redefine the role of the ICSSR as funding agency of research institutes. Would the ICSSR also function as an extension of the government sector and relate its funding decisions to time-bound, short-term and quick-yielding research projects and programmes? Or would the ICSSR take a long-term perspective, disbursing funds and building bridges between academic community and the rest of the society in a manner that research institutes are able to develop into independent, dynamic and creative centres of research engaged in both short-term and long-term studies.[6]

Need for Revamping

The challenge for research institutes to redefine their identity emanates from certain other crucial factors both exogenous and endogenous to research institutes in the current phase.

It has already been noted that during the first three decades after independence the absence of an infrastructure for collection of socio-economic information and its analysis within the governmental structure at the centre and at the state levels provided a favourable context for the formation of a chain of research institutes outside the governmental structure. As a result of the compulsions of the planning process, however, a chain of institutions specialising in data collection, its computation and analysis have emerged in recent years within the framework of the Central and State Governments themselves. In addition, the vastly expanded private sector has also sometimes embarked on setting up research institutes and agencies for its own purposes in differenct parts of the country. These proliferating governmental and private research institutions have not only large funds at their disposal for sustaining and developing the infrastructure for research. They are also the main generators of vast quantities of vital information and data relating to the economy and society.

If research institutes of the academic type have to survive and grow under these constraints, they must re-establish their legitimacy by carving out a distinctive role for themselves in this changing and competitive situation. If the research institutes try to duplicate what is already being done within the governmental institutions and sometimes being done much better because of better access to information and resources and better perception of short-term needs of economic and social policy, the research institutes would soon lose their identity. They would also lose their identity if research workers allow themselves to be drawn too frequently into ad hoc research assignments, consultancies, and other advisory roles and responsiblities so abundantly offered by international and national agencies on very lucrative terms and conditions. The growth and development of research institutes cannot thus be sustained on a long-term basis without a hard core of social scientists devoted to professional life and its rigour and discipline as a lifelong commitment. In a nutshell, lack of perception of opportunities and challenges for social science research in a complex environment may hasten the process of obsolescence of research institutes and their research personnel which were once very much in demand from government and private sector agencies.

New Challenges

In the above background the intellectual renewal of social science research centres is closely related to their intellectual resilience in posing new challenges before themselves. The task before research workers is to address themselves to questions which are relevant to India at the present stage of its evolution. It must be noted that perhaps not all the questions which were intellectually exciting and socially relevant during the first three decades following India's independence are relevant now. One is confronted more and more with the evidence of growing internal differentiation in the Indian economy and society and of explosion of mass consciousness and aspirations. The understanding of the inner dynamics of the emerging economy and society and of the content and direction of mass consciousness has emerged as a crucial challenge for social science research in India today.

One can no longer evade recognising the growing hiatus between the normative view of a Just Society propagated by Nehru for half a century and the emperical view of injustice-prone, socio-economic evolution in India. Whether such a hiatus is inherent in the very logic of promoting modern economic growth in an underdeveloped economy; or it is the result, as suggested by Myrdal and many others, of the postponement of radical changes in the property structure and the power balance, these are questions which can no longer be evaded by social scientists studying the economic problems of India. In other words, life itself has put into the centre of the stage the question of the dialectic between *multi-class* mobilisation against underdevelopment on the one hand and the *mass* mobilisation for equity and justice on the other. It has lent legitimacy and urgency to the task of evaluating the emerging production relations, the power balance and the psychology of both the upper classes and the masses from the perspective of harmonising the demands of accelerated capital accumulation on the one hand and of distributive equity on the other.

The reformulation of researchable questions is also linked with the reappraisal of the Nehruite world-view providing the idological frame for India's development during the three decades. It is important to note that thus world-view sought to synthesise the vital elements of Indian Tradition, liberalism and Marxism. It also served as the unifying framework for all sections of the Indian society during the Nehru era and even a part of the post-Nehru era. It had also wide international support from opposite camps. This world-vide fructified into the grand Nehruite conception of multi-class mobilisation for India's economic independence and for a Just Society through just means. It must be admitted that the national concensus round this conception has been weakened in recent years. The question whether this world-view is obsolete or only in need of reformulation and readaptation in the light of changes in India and the world cannot at all be settled by political or economic polemic which is so dominant today. This question can only be settled with reference to actual experiences and results of social action during the last three decades.

New challenges for social science research lie, therefore, in working for reconstruction of the national concensus. The reconstruction process entails re-examination of the basic premises and propositions of Indian Tradition, of Liberalism and of Marxism in terms of the actual experiences of both the democratic-capitalist and centrally planned economies. The Nehru model and strategy of development must also be evaluated in the light of lessons of economic experiments in India and in the other parts of the developing world. The accumulated growth experience inside India and outside can help to explore and generalise under what conditions the liberal conservative view—*Natura non-facit saltum*—which Marshall placed on the title of his *Principles* is valid and under what conditions the radical's idea of growth through leaps and sharp discontinuities is more relevant.

What is significant is that experience of the colossal human cost of economic solutions whether in Stalin's Russia and Mao's China, or in Right-wing political regimes of the Asian continent—all these have served to rehabilitate and relegitimise the vital ingredients of Nehru's Basic Approach[7] to problems of growth and development. They have also served to rehabilitate and relegitimise his perspective of cooperation and conflict-resolution both within and among nations for dealing with the problem of economic backwardness which has to be treated as the problems of mankind as a whole. Nehru's explicit recognition of multiple approaches to the human problem and his vision of divergence between nations under different economic and political systems being bridged in the pursuit of common aims and values has a new appeal today. It is dangerous to ignore Nehru's oft repeated view that the alternative to international understanding and cooperation is the prospect of total annihilation of all human civilisation and culture.

The reformulation of questions of Indian development and transformation in the present phase will gain in sharpness if we adopt a comparative approach taking account of the tremendous regional diversity inside India as well as Asia. Cognizance has also to be taken of the conflicts and dilemmas thrown up by modern economic growth itself in the developed world. The underdeveloped countries have to pursue modern economic growth keeping in view not only the challenges posed for man's survival by untamed nature under conditions of economic backwardness. They have also to take into account the vast problems posed by man's supremacy over nature which, according to a leading scientist, has created the danger of "the crushing of man by his own creations."[8] No more can one confidently assert as Marx did in the Preface to the first volume of *Capital* that "the industrially developed nations show to the industrially backward countries the image of their own future." A reconstruction of the very premises of the industrial civilisation has become unavoidable now, a task which can no longer be left to those who are afraid of looking forward. Nor can it to be left to romanticists of the other variety who are not inclined to see the problems thrown up by the industrial society.

For coping with the problems and dilemmas of the new science-directed, man-made world, natural scientists themselves now assign a much crucial role to social science—to economics, sociology and psychology—than is realised by social scientists themselves.[9] Indeed if economic growth is not to be equated with civilisation but to be treated, in the words of Keynes, as a means to civilisation, then economists must join with other social scientists, in the search for a meaning of life and of a life-style relevant for man in the industrial age. They are thus called upon to tackle problems which are not narrowly technical but are also philosophical.

Whether social science can respond to these challenges will depend upon whether there emerges a group of dynamic individuals within the research institutions and universities linked up with forward-looking elements in the wider socicty who have the courage to initiate thinking on basic issues.

We conclude this paper with a reference to Nehru who asked social scientists not just to keep waiting like passive fish for being caught in the net by others. He wanted them to act like fishermen throwing their own nets to catch people's eyes. In other words, he wanted them to take the lead in generating and disseminating new ideas relevant to the task of building up a New Society.[10]

References

*This is a revised version of the note originally prepared for discussion at the Conference of Directors of Research Institutes held at the Indian Council of Social Science Research on 17-18 July, 1981 which was published in the ICSSR, New Delhi (Vol. XII (1). It has been substantially rewritten after taking note of discussions at the Directors' Conference and comments from V.K.R.V. Rao, S. Chakravarty, C.T. Kurien, T.N. Madan, Barun De, S.P. Verma, G. Parthasarathy, C.H. Hanumantha Rao, the late J.N. Sinha, A.K. Dasgupta, S.N. Mishra, Ramesh Bhatia, Swapna Mukhopadhyay, Kanchan Chopra, B.B. Bhattacharya, K. Subbarao, G. Kadekodi and numerous others.

1. In the recent period a comprehensive review of "Social Science Research and Public Policy in India" was undertaken on behalf of the Ford Foundation by Myron Weiner (*Economic and Political Weekly*, Vol. XIV, No. 37, September 15, 1979).
2. A National Seminar on "Relevance in Social Science Research" was sponsored by the Institute of Economic Growth in 1980 with this very consideration in view. The papers and proceedings of this Seminar are now available in a volume entitled *Relevance in Social Science Rēsearch : A Colloquim*, Vikas, 1981.
3. How similar are some of the basic problems of social science research and of research institutes in countries having different types of political systems like India on the one hand and Poland on the other can be seen in a recent article on *The Development of the Social Science in Poland* (*Policy Perspectives*, Vol. XXIII, No. 1, January 1980).
4. It may be noted that if the principle of parity between different departments of the university in allocation of funds were to be strictly enforced, the vast expansion of socio-economic research required for meeting the expanding needs and requirements of a programme of economic growth could never be effected within the framework of universities.
5. M.N. Srinivas has sharply focussed on the dangers to good research of this type of organisational structure characteristic of research institutes in the following words: "There is also emerging a new type of research structure. At the top of the pyramid sits the director of a research project, usually an academic enterpreneur able to secure funds from some organisation or from the government Beneath him is a deputy director in charge of the project. Below him is superintendent to draft questionnaires and to analyse the data, and to write the report under the supervision of the deputy director. Finally, there are the hewers of wood and drawers of water, the investigators, who do the dirty work of actual investigation...No social scientist who cares for the healthy growth of the social sciences in India can remain a mere spectator of what is happening to-day. Under these conditions no work of distinctive and originality is likely to emerge in the near future...." M.N. Srinivas, "The Study of Rural and Urban Societies" in *Caste in Modern India and Other Essays*, 1962, p. 147.

6. For information on the role and policies of the ICSSR, see *Role, Responsibilities, Functions, Programmes and Organisation of the ICSSR,* Occasional Monograph 7 ICSSR, New Delhi.
7. Questions of world-view are discussed by Nehru in a paper entitled "The Basic Approach", *Jawaharlal Nehru's Speeches, Vol. Four,* 1964, pp. 114–123. The paper was published in AICC Economic Review in August 15, 1958. They are also treated in Chapter I of the Third Five Year Plan entitled "Objectives of Planned Development". It is well-known that this chapter was contributed by Nehru himself.
8. J.D. Bernaul observes as follows:
   "Science until now has been primarily concerned with the analysis of the world as it existed prior to man and not with man's own work...But this is only the beginning; the world as made by man requires also to be studied and controlled. As time goes on the part of the universe determined by man will become relatively more important, but as this part will have been more rapidly constructed it will necessarily be less stable and will require a thorough and careful understanding to prevent the crushing of man by his own creations." (J.D. Bernoul, *The Social Function of Science.* London, 1939, pp. 344).
9. "It is quite clear that if humanity in the near future does not destroy that elaborate cooperative effort which distinguishes civilisation from the previously purely biological existence of man, it will have to tackle a universe which will itself become more and more a human creation. Already the chief difficulties in the theory and practice of science lie in the problems that human society has created for itself in economics, sociology and psychology. In the future, as the simpler conquest of human non-human power is brought to its completion, these problems will become increasinlgly important." (*Ibid.,* p. 412).
10. To quote Nehru:
    "Particularly at the present moment when there is a certain clash of ideas, it is necessary that intellectuals should come in, even more than politicians, to attempt to clarify by quiet dispassionate discussions among themselves, in public, with others, and in books and articles so as to educate not only their own students but the general public. For planning requires widespread understanding in order to link together millions and millions of people in a common task.
    "We have started thinking about the Third Plan. We are deliberately spreading our net wide for thought and for cooperation, and the intellectuals are not the persons who should merely be passive fish to be caught in the net. Indeed they should constitute themselves the fishermen who throw the nets to catch people's eyes in order to discuss them and influence them and thereby make this question of how our country is going to progress, one of the vital issues in people's minds.".... Jawaharlal Nehru, "Democracy and Planning", Inaugural Address to the Second All-India Conference of Planning Forums, New Delhi, December 10, 1958.

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Higher Education and the Labour Market in Asia

BIKAS C. SANYAL

Whatever the political ideology of a government, employment of the educated is increasingly being considered as an essential element of national development, not only because the labour market is at the core of social and economic development since it determines the role of an active citizen, but also because every citizen is entitled to have a social role to play, and, today, paid employment is the means of playing that role. This is why the discussion on higher education and the labour market becomes important in the context of any debate on higher education and development.

In some sense, it is an unwelcome situation, not only for Asian countries, but for the whole world, because education in general, and higher education in particular, had more important goals in the past than merely to obtain a 'job'. We can see reference to the objectives of education when Socrates said: "and we shall begin by educating the mind and character, shall we not?" In the oriental countries, especially in Asia, moral and ethical aspects of life are the most important elements of education. But education and work were also closely linked together. This needs elaboration since our main concern in this paper is to deal with the relationship between higher education and the world of work.

The economy in most of the Asian countries, before the advent of the western commercial and industrial civilization, was essentially a subsistence agrarian economy. The primary task of the community was to produce food, which was the most important basic need. All ancillary crafts and ocupations supported this primary function. All kinds of services necessary for subsistence were provided by different social groups. The socialization of the individual, his training in a given skill and in the value system of the society were all indivisible elements of a single learning system. The family, the work-place, the formal centres of learning, and the religious institutions, all imparted education on how to live, work and follow the rules of the society in which an individual was born. The social leaders, the elders, expert craftsmen and religious teachers set the standards and provided the learning. The world of work could hardly be separated from the world of education.

Even during the colonial period, the same system prevailed in most of these countries, particularly in the rural areas which were mostly unaffected by the western industrial civilization brought by the colonial rulers. However, in the urban areas and the tiny modern sector of the economy, namely the government and commercial sector, the colonial rulers needed local manpower at the subordinate level, whom they trained in institutions set up according to their own needs. The formal education system which was producing these cadres was elitist, and generally the language of instruction was that of the colonial rulers. Higher education was restricted in quantity and type to meet the needs of the rulers. The influence of the family, religious institutions and the work-place in imparting education was diminishing fast, and the traditional learning system was disintegrating. The elitist modern education, on the other hand, ignored the very fundamental aspects of life, such as the development of values, formation of character, etc. The modern sector, although small, was distinct from the vast subsistence sector of the economy, and unemployment of the educated started to be a problem particularly among the graduates of the traditional institutions.[1]

One of the main reasons for this situation was that the modern organized sector started recognizing the completion of an educational programme as a requirement for employment, graded perhaps arbitrarily according to the type and duration of studies. Education and work now had a correspondence, but the inherent linkage was lost; the world of education became separate from the world of work.

At independence, many of the Asian countries had to expand their educational systems due to social, economic and political reasons. But, the content and structure of the former colonial rulers' education did not undergo substantial change, and, as we know, the objectives of that education were very limited. The traditional education system also became irrelevant with the fast changing needs of the society, and so these countries opted for expanding the modern education system with all its defects. This system was not relevant for the development efforts, new skills and new types of responsibilities that an independent country's government and commercial sector needed, and above all the system did not have any emphasis as regards the fundamental aspects of life.

It is in this context that a Conference such as this, which tries to identify not only the developmental basic needs of life, but also the moral and cultural aspects and means to adapt the system of higher education to 'appropriate' technology, becomes important. It gives us an opportunity to look for means to integrate education with life, as was the case in the past. This would require broadening the definition of the 'labour market', which it would be pertinent to consider as the place where an individual spends most of his life with the social role of redressing his life from futility and contributing to the development of the society.

The Employment Market

As mentioned before, the modern sector of the economy which provides gainful employment was small in most of these developing countries at independence. However, during the period after the second world war when most countries became independent, this sector increased rapidly due to the development efforts. Even then, the rate of growth of employment was not in keeping with the rate of growth of the economically active population, despite the fact that the latter excludes individuals continuing education and the number who are doing so is increasing at a faster rate.

The unemployment situation in Bangladesh for example takes a different form in disguised unemployment or under-employment, because of its continuing agrarian economy. Official records show that 11 per cent of the total labour force was estimated to be unemployed in 1979.[2] The problem of unemployment amongst the educated is more acute. According to the Planning Commission's estimates, 66,000 graduates—or 48 per cent of job aspirants—remained unemployed in 1980.[3] Table 1 gives the estimates of total unemployment in India, Indonesia, Philippines and Sri Lanka.

Table 1

Country	*Year*	*Unemployment (in thousands)*	*Growth rate (%)*
India	1974	8,393·3	10·9
	1978	12,677·8	
Indonesia	1971	895·0	5·6
	1976	1,172·0	
Philippines	1971	666·0	—3·0
	1975	581·0	
Sri Lanka	1973	457·7	5·8
	1977	572·6	

Sources: For India, Philippines and Sri Lanka : ILO Statistical Yearbook 1980.
For Indonesia : World Bank, Employment and Income Distribution in Indonesia, *Washington,* 1980.

It can be observed from the above table that except in the Philippines unemployment among the active population is increasing at a very fast rate, the country facing the worst problem being India. Even in the Philippines, among the employed persons, one out of four were non-voluntary part-time workers, and there were about 8,00,000 under employed looking for job opportunities.[4]

In India, unemployment among high-level graduates, especially in professional and administrative jobs, increased at almost 13 per cent per year during the period 1971-76, giving a total unemployment figure of 7,16,000 in 1978 according to the ILO.[5] In the Philippines, one estimate gives a figure of nearly 70,000 surplus graduates in 1978. 'Even with the strict control of admission to higher education in Sri Lanka during the period 1970-77, unemployment among graduates in professional and administrative fields has increased at 2.5 per cent per year, with a total number of 1,11,000 individuals in this category remaining unemployed in 1977. The situation is alraming, not only because poor countries like these have invested large sums of money in educating these people, but also because the frustration and unmet expectations which result from unemployment have been creating serious social problems.

The Quantitative Development of Higher Education

One would be tempted to relate the problem of unemployment among graduates of higher education with the quantitative growth of higher education in these countries. However, it is striking to note that the high rate of growth in unemployment of the highly educated in India during the period 1974-78 has not been due to a high rate of growth in enrolment in higher education. According to Unesco statistics, enrolment in higher education in India has been controlled substantially during the last seven years at an annual average growth rate of 1.5 per cent only. Similarly for Sri Lanka, the annual average growth rate was 1.2 per cent during the period 1970-76. However, in Bangladesh, the Philippines and Indonesia, enrolment in higher education has increased at an average annual growth rate of 6.4, 5.9 and 3.0 per cent respectively, as shown in Table 2.

In Bangladesh, unemployment among graduates is serious, and the reason could be attributed to the enrolment growth in the face of economic stagnation. In the Philippines and Indonesia, the situation is not that serious because the economy has grown at a higher rate than in the other countries, as can be noted from the growth rate of per capita gross national product (GNP) given in Table 3.

Even with a high growth rate in the economic activities, particularly due to petroleum, unemployment amongst the whole population has been increasing in Indonesia, whereas in the Philippines, which has a lower economic growth, the overall unemployment rate has decreased. Part of the explanation is the definitional problem, because unemployment has been defined in different ways in different countries in spite of the efforts of standardization by the ILO. But we should not miss the point that participation rate among the economically active population in Indonesia might be increasing faster than in the Philippines. The possibility of overseas employment for Philipinos is higher as well.[7] Also, growth rate in per capita income does not

Table 2

Country	*Year*	*Enrolment (in higher education) (thousands)*	*Growth rate* (%)	*Proportion of science-base in* 1977	*Enrolment ratios* (20–24)
Bangladesh	1970	117·6	6·4	30·5	2·10
	1977	181·8			2·54
India	1970	2,903·6	1·5	29·7	8·19
	1977	3,216·4			8·40
Indonesia	1970	248·2	3·0	34·3	2·83
	1976	296·3			2·46
Philippines	1970	651·5	5·9	27·9	19·94
	1977	970·0			23·69
Sri Lanka	1970	12·3	1·2	38·7	1·17
	1976	13·2			1·34

Source : Based on data from Unesco Statistical Yearbook 1980. *The latest year available has been used.*

Table 3

Country	*GNP per capita in* 1979	*Growth rate in GNP per capita* (1970–78)	*Population* (*mid*-1979) (*thousands*)	*Population growth rate* (1970–78)
Bangladesh	100	0·2	86,961	2·8
India	190	1·6	6,58,337	2·0
Indonesia	380	5·3	1,38,391	1·8
Philippines	600	3·7	46,303	2·7
Sri Lanka	230	1·9	14,539	1·7

Source : World Bank Atlas, 1980.

reflect the distribution of that income through employment in an even manner. The employment situaton among higher education graduates in Indonesia could not be assessed because of lack of data. The economic growth expansion of service facilities, including education, would lead one to believe that the problem is less serious in Indonesia than in the other countries considered.

What is striking in the development of higher education is that in the Philippines and in India the enrolment ratios for higher education have been substantially higher than in the other countries. Nearly one out of four citizens in the Philippines, and one out of twelve in India, in the relevant age group, had a place in the higher education system, whereas in the other countries the enrolment ratio with respect to the relevant age-group has remained remarkably low so far. In the near future, social pressure will open the door to higher education for citizens of those countries with low enrolment ratios, with the subsequent need to open the door to the labour market. In Sri Lanka, the situation has already changed; enrolment in higher education has been increasing at a higher rate since 1977, after the change in government. Other countries also have to be ready to face this situation.

Another interesting feature in the development of higher education can be observed from Table 2, as far as the distribution of enrolment among science-based and arts-based subjects is concerned; the former perform most of the productive activities in the economy, the latter the service activities. In most of the developing countries, when social pressure has led to expansion in higher education without a proportional increase in the share of the budget, expansion had to be made in areas where cost was less. The arts-based fields of studies are much less costly than the science-based fields of studies and therefore enrolment in the former has increased at a much faster rate. As can be noted from Table 2, in all the countries the majority of students are enrolled in arts-based subjects, and only one out of three students can get a place in the science-based fields of studies. The economy of a developing country needs more science-based students to explore its resource potential and exploit the available resources in an indigenous way.

Higher Education, Employment and Development

Analysis of interdependence between development of higher education and the overall socio-economic development of a country calls for an analysis of the resource potential in natural, physical and human categories. To develop each region in a balanced way, the development strategy of a country should take account of whatever natural resources are available in that region. The process of exploitation and the choice of technology will be determined inter alia by natural resource potential. The exploitation of these resources requires skills which must be provided by the education system. The way in which natural resources are exploited therefore influences the educational development strategy in structure and content. It is also dependent on the available and potential physical resources such as buildings, equipment, transportation and communication facilities. Development of these physical resources depends in turn on the development of education and vice versa. An analysis of physical resources potential also becomes an important task in ascertaining the role of education in the overall development strategy of a country or a region.

In the analysis of the development of human resources, traditions, customs and beliefs cherished by the people cannot be ignored. Demographic changes influence the human resource potential as well. Education, for that matter higher education, has to be planned in such a way as to develop this human resource potential in order to respond to the needs of the social and economic development of the country or the region while considering the expectations and attitudes of the people. An analysis of human resource development therefore becomes imperative in the overall analysis of the relationship between higher education and employment.

The conditions of work, recruitment and promotion policy of the employment market influence the type of qualifications that an employee would have. A full employment policy has to guarantee a job for every individual. In countries where this policy does not prevail, employment is an objective of the individual, but even then governments have to intervene in making arrangements for employment of graduates to avoid a social crisis. Development of human resources therefore becomes dependent on the operation of the labour market and the prevailing employment policy of a country.

The policy of human resource development for economic and social needs calls for an analysis of the skills needed for the various activities of the economy. The output of the education system, by type of skills taught, has to be known for proper utilization of the human resources it generates. Before the education system can be planned with respect to intake, content and structure, it is only logical that demands for such skills in quantitative terms be estimated before hand to whatever extent possible. These estimates of demand, which traditionally have been called manpower demand but are broader than that because of the consideration of the qualitative aspects, are susceptible to inaccuracy due to economic uncertainties and the changing nature of the perceptions, attitudes and expectations of the different segments of the society. However, some guidance is needed as to the direction that the development of education in general, and higher education in particular, should take in quantitative terms to cater for the future needs for skills so as to avoid unemployment or underemployment.

It is believed that these estimates, if properly prepared, can provide such guidance. These quantitative estimates of needs for skills can be checked with the actual values to identify the degree of inaccuracy and to form a check-list of missing parameters and variables. They are also useful for setting the foundation of the strategy for the develoment of the structure and organization of the education system.

It is assumed that where higher education is concerned the estimates are easier to make, because of the increased degree of correspondence between the skills imparted in the higher education system and the skills needed on the job, than for other levels of education. Having regard to the problems of estimating future needs for highly-qualified manpower, an analysis of the matching between the quantity of trained people and the quality of the training content demanded by the economy and responsiveness of the institutions of higher education becomes particularly useful. This analysis of matching brings out the shortcomings of the education system, not only quantitatively but also qualitatively. A careful diagnosis of the education system forms the basis of any future strategy for the higher education system and also provides a yardstick for achievements in restructuring the social system through change in the educational system, and illuminates the problems encountered in achieving the targets of socialization and equality of opportunities in the world of work. These problems may be seen in the various education 'paths' of different population groups, which result in the different work opportunities in the labour market.

To identify the factors obstructing socialization and equality of opportunities requires a sociological analysis of the population, their perceptions, attitudes and expectations concerning the education system and the labour market. This analysis must give details of such socio-economic characteristics as parental educational and income background, age, sex, region of home, type of school attended, etc.

An analysis of the problem of unemployment and under utilization of graduates in respect of the training received and the skills needed by the job can provide useful information for decision-making to improve the relationship between higher education and the world of work. This analysis would also involve a study of the process of employment and its effectiveness as perceived by the graduates and the employers.

An institutional mechanism for interaction among the students, their parents, the institutions of higher education, the graduates, the employers and the planners and decison-makers could also assist in improving such a relationship. A better match between the expectations and the admission policies of the institutions of higher education could result in better academic performance and better socialization. This could be achieved through the design of more rational selection criteria and a better counselling system.

A better match between the expectations and qualifications of graduates and the expectations and requirements of the employers could result in higher productivity, more job satisfaction, and less structural imbalance in highly-qualified manpower with the adoption of better employment procedures and selection criteria. A matching system among the different segments of the society could be a useful tool to develop a 'fine tuning' procedure for constant revision of the higher education system and the labour market which would be able to take into account the changing technology, re-ordering of developmental priorities, changing structure of the education system, and changing perceptions, atttiudes and expectations of the different segments of the society.

While developing international co-operation, any aid agency should also be sensitive towards the complexity of the relationship between higher education and development in a developing country. In some of the international forums, the scientists and educationists of developing countries are getting worried about the 'transnational intelligence industry', which is made up of the university system, consultancy firms and multi-natonal corporations in the developed countries. These have a tremendously dominant position in the world and can choose what kind of intellectual capital goods to export. The phenomenon has been described in the following way:

> ...this transnational intelligence industry imports its raw materials from the developing countries in the form of students. It reprocesses those students into something the dominant partner wants them to be, they will certainly be important bridgeheads, clients and relay stations for the interests of the dominant countries.[8]

Some Findings of IIEP Research

It is not possible here to go into all the details of the results of the analysis between higher education and employment with special emphasis on social, economic and cultural development of the countries under consideration. These have been published separately. Only some general findings are noted below :

(1) Although each of the countries mentioned in the paper has attempted to relate the development of higher education to the basic needs of the people to varying degrees, a coherent and comprehensive national policy in this respect, backed up by concrete programmes, is still lacking mainly because of lack of information, know-how and financial resources.

(2) Although there has been imbalance in the growth of enrolment in different disciplines during the period of rapid expansion of higher education in the last decade resulting in the problem of unemployment of graduates in overcrowded disciplines, in Bangladesh, Sri Lanka and Indonesia enrolment in higher education has remained restricted to only a few privileged citizens until now. These countries will have to be ready to expand their higher education further with consequences for the labour market even more serious than in India and the Philippines.

(3) In all the countries, expansion in higher education has ignored employability of the graduates, although students pursue higher education for better employment opportunities contrary to the belief in some quarters that a significant proportion pursue higher education for its own sake.

(4) In all these countries, it has been found that there is a significant mismatch between the expected educational career of the student and the actual educational career. The popularity of the subject depends mostly on the economic reward and possibility of a government job offered to the graduates in the subject.

(5) Professional guidance and career information are very limited in all these countries and parents and relatives, rather than vocational counsellors at school, influence the choice of an educational career by a student.

(6) Academic performance is the most frequently applied criterion for recruitment by the employers, although they opine that there is no significant relationship between academic performance and job performance.

(7) Recurrent education and integration of work experience in the educational process are regarded as the most effective method of making education responsive to the work needs.

(8) Although self-employment calls for specially oriented education programmes, none of the countries under consideration have any policy on higher education for self-employment.

(9) There is hardly any correspondence between the perceptions of the graduate and the employer concerning the conditions of satisfactory work. Good income is not the most important criterion for a satisfying job.

(10) Non-availability of correct information for graduates about where the jobs are to be found and how to get them is one of the most important reasons for unemployment among graduates.

Conclusion

It would be ideal if national policies for higher education could be formulated in relation to the basic needs of the citizens of these countries. The most important of these needs is gainful employment for all because it is the means of survival. Higher education, to justify its role, has to prepare its students for a suitable role in the society, as well as to develop the country in such a way that all citizens have a role to play. If today education is considered to be a basic human right, gainful employment will also be demanded as a basic human right. Article 55 of the Charter of the United Nations states:

> With a view to the creation of conditions of stability and well-being which are necessary for peaceful and friendly relations...the United Nations shall promote... higher standards of living, full employment and conditions of economic and social progress and development.

With technological advancement, the size of employment, as it has been traditionally defined, may not increase to the extent that the economically active population in the world will increase. In the developing countries of Asia, there is, however, still some scope for increasing employment by enlarging the modern sector of the economy. Higher education will have a role in increasing the economic activities by relating itself to economic and social development. Even then, the size of employment may not cover the entire economically active population who seek an identity in the society by having an employment. At that stage, to achieve full employment in any country, it will be necessary to redefine employment as any useful social role that an individual plays in the society for its preservation and development, and governments will have to formulate policies to recognize these roles economically and socially.

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Economic Dualism and Educational Policy Reflections of an Amateur

RADHIKA RAMASUBBAN

The large part of the present system of higher education in India can be characterised as one of total ineffectiveness to comprehend and tackle the problems of education in a dual economy characterised by overall economic stagnation. That the roots of this ineffectiveness lie in the nature of the interaction between educational policy and the pattern of socio-economic development with the latter largely moulding the former, is the issue which is sought to be posed here.

The ineffectiveness referred to above came out clearly in a recent episode pertaining to the University of 'X'. When, this year, 'X' University began conducting its annual examinations, the mass cheating which has been going on in most of the universities of Uttar Pradesh (and, going by the press reports, of Bihar and some other regions as well) for decades, reached such unprecedented proportions, that even the teachers of the University who have come to accept it as a fact of life, were provoked to declare their refusal to invigilate the farce. The students insisted that the examinations be held and the teachers stood their ground. The most significant response that this impasse in what has become the chief function of most of our universities, viz., the conferring of degrees for which the motions of examination as a pre-requisite must be gone through, could evoke from the University Grants Commission, the highest administrative and policy-making body, was a warning to the 'X' University that all Central grants would be stopped if the University did not get on with conducting the examinations. In other words, the system must keep going, and the thread bare veil of 'academic' functioning kept carefully wrapped round its behaviour. As long as the veil remains, the problems are supposed to remain contained. When the veil drops and the university stands unclothed, as it did recently, the activity at the regional and national levels is only to restore the veil rather than come to grips with the real problems and challenges of the situation.

The malaise gripping higher education in large parts of the country is a reflection of the development strategy which places heavy reliance on the elite and views the greater part of the higher educational system as a tactic to satisfy mass sentiments and contain discontent.

The five year plans, particularly the second five year plan which was launched in the mid-1950's, charted the design of development. The major plank of this design was the rapid development of a modern sector with a strong thrust in the direction of basic and heavy industries while also encouraging the growth of consumer goods industries through import substitution[1]. Given the absence of an indigenous scientific and industrial base and the huge investments required by the large scale modern manufacturing sector, massive import of capital and technical know-how had to be resorted to, to finance and sustain the pattern of development. This import which initially remained confined to the capital goods sector began to flow into the consumer goods sector as well, from the early 1960's. The working out of this design has resulted in a situation where a small exotic modern sector and a large traditional sector exist in isolation from each other. The only unifying bond is their common stagnation born out of the absence of linkages between the two.

This approach to development which saw an exogenous and autonomous modern sector as the key element in development and the traditional sector only as something to be tolerated found its response in a dualistic educational policy. On the one hand a clearly articulated policy sought to meet the manpower and skill requirements of the modern sector through the creation of an enclave of well-endowed 'centres of excellence', mainly institutes of technology and management liberally funded by foreign agencies and initially even manned by foreign experts. Since the key need was met by this enclave, it was not seen necessary to work out any integration between the rest of the educational system and the developmental design. In so far as attention was directed towards the rest of the higher education system it was only due to the compulsion of a newly independent 'democracy' to address itself to educational growth and, to some extent, due to the need to meet the requirements of traditional jobs in the bureaucracy, legal system, etc.

The modern manufacturing sector, however, has belied any expectations as the engine of sustained growth in the Indian context,[2] and the flaws inherent in such a design have had a bearing on the higher education system as well. On the one hand we have a situation where the human capital needs of the modern sector are met by the enclave institutional structure. The modern sector ensures highly-paid jobs to the elite. In addition, the excellent educacational facilities, high standards and advanced-countries-biased curricula of the enclave institutions create an inter-national market for the holders of enclave degrees. On the other hand, the fact that the modern sector has not been growing at the expected pace while production of enclave graduates has continued unabated has resulted in the more enterprising and better qualified among them exercising their options in what remains basically a seller's market for them, migrating to even more lucrative and attractive jobs in the advanced countries of western Eurpoe and the US, leaving only the less fortunate or second-best to man the jobs in the modern sector in the country.

The rest of the higher education system was felt out in the cold by the development design. In the absence of any compulsion to establish a congruence between the development strategy and educational policy, higher education became the avenue through which welfare objectives such as equality of opportunity, etc., which had not been knitted into the development strategy could be vaguely and loosely vindicated. This approach, along with the widespread regional demands for more colleges and universities has led to a steady rise in the quantitative growth of higher education.

There is, however, a further dualism operating within this structure. That is, within the rest of the higher education system there has developed a dichotomy between the metropolitan centres and the regional/peripheral centres. Whatever degree of responsiveness to the economy exists in the rest of the higher education system, i.e., for lucrative and 'prestigious' jobs in the bureaucracy, public sector undertakings, scientific research institutions, journalism etc., is met by the central universities and the universities in the metropolitan cities like Bombay, Delhi, Calcutta and Madras. The repurcussions of this exhaustion of relevance at the metropolitan level itself, is that the rest of the system is rendered redundant, ineffective and vestigal, plagued by problems such as meagre finances, overcrowding and lack of adequate facilities, and declining standards.

This redundance, which is a logical outcome of the lack of integration between the higher education system and the economy, has, however, had its own usefulness to the ruling elite, even though it is a quagmire into which its participants have no other option but to sink. As the inherent weaknesses of the development design began to come to the fore resulting in economic stagnation and explosion in unemployment[3] investment in higher education came as a relief, cushioning the unemployment problem, as the process of job-seeking could be postponed if more and more persons went in for higher education. Hence the same higher education which had been betrayed by the development design could be used to camouflage the growing and increasingly apparent weaknesses of this design. This provided the rationalisation, though unwittingly, for the vertical and horizontal expansion of this residual, ineffective sector resulting in what has come to be called the quantitative explosion in higher education. The feverish process of vertical expansion through the indiscriminate increase in the number of seats with virtually no admission standards, the opening of more departments and more sections in each department, the manipulation of courses creating several 'parts' in each subject and course, and increasing the duration of courses, liberalising of examination standards, etc., has been continuing unchecked. Horizontal expansion through the opening of more and more colleges and universities in different geographical regions has been the other aspect of this scramble for higher education. Much support has come for the latter policy from politically motivated demands from the different regions for their very own university where teaching will be in the regional language. In a situation of uneven development among different regions, a liberal dose of higher educaton can only be a temporary solution to contain popular discontent under conditions of regional economic backwardness and unemployment. This Malthusian-like tendency of higher education in India to grow faster than the ability to absorb graduates into employment has escalated the problem of the educated unemployed to crisis proportions and generated new social tensions of which the recent widespread campus unrest on the issue of job reservations in Uttar Pradesh and Bihar is only a partial reflection.

Conclusion

It was inevitable that the internal contradictions of this approach would lead to its collapse, and the malaise we witness today is a reflection of this working out of the contradictions to their logical conclusion. The demand for expansion in higher education and the response to it have been of an order wherein the internal functioning of the system has become impossible due to the inability of the system to accommodate the expansion. As the irrelevance and redundance of the higher education system becomes increasingly apparent to its participants and the process of degeneration gains momentum, the entire academic functioning of the university gets reduced to a mockery. Woefully inadequate facilities such as books, journals and equipment, overcrowding in classrooms and hostels and the absence of other physical facilities act as an additional constraint on creating a conducive environment wherein knowledge can be effectively generated, transmitted and received. When teaching and studying lose their meaning examinations become a farce, and students prefer to put as little effort as possible between themselves and their degrees, since even a worthless degree is a better bulwork than no degree at all in a situation of limited job opportunities. Even the ritual value of higher education threatens to get eroded when student agitations keep the university closed for most of the year provoked by demands for admission, promotion or easy question papers; in response to manipulation by political parties and their factions, or by University teachers who are in a constant state of politicking; or in protest against the large-scale misappropriation of university funds which goes by the name of university administration.[5]

The problems afflicting higher education in India are a result of an exotic, exogenous growth points strategy relying on enclave institutions for meeting human capital needs. The built-in limits to growth in such a strategy tends to accentuate the economic stagnation and the educational crisis. Only a reworking of the entire socio-economic structure can be a lasting solution to the malaise. This restructuring must be of the type which would establish an organic relationship between all branches of the economy and the various segments of the population. The starting point for this has to be the gearing of the economy to the production and diffussion of mass-based goods and the types and levels of skills identified accordingly. A meaningful educational policy which would meet the real needs and aspirations of the vast majority, can begin to take shape once this necessary condition is met.

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Universities and People's Education for Development

KISHORE SANT

In the past 25 years development planning and thinking in our country, as elsewhere in the Third World, has been dominated by 'economism'. It has been primarily aimed at maximizing economic growth and industrialisation by means of technical assistance. Development in this sense is seen as a set, preordained progression along the path hitherto followed by the industrial nations of the Northern Hemisphere. In this process education is seen as helping the individual and society to move from a traditional to a more modern condition and as fostering knowledge, skills and values for modern commodity production and consumption activity. Higher education is looked at as a system for selection and training for the high-level manpower or the managers of this state-led development process.

This development approach and its educational support has held sway in post-independence India resulting in the building up of a sizeable economic and industrial infrastructure and productive capacity, as well as a phenomenal and continuing expansion of facilities for formal education which is sometimes referred to as an educational explosion.

The Kind of Development Needed

Lately, however, it has become clear that these developmental and educational strategies have misfired in certain crucial respects. They have failed to deal with the problem of equitable distribution of incomes, have aggravated the problem of unemployment and made the national and local economies more and not less dependent on technical assistance. In the process they have contributed to the perpetuation of the colonial situation of under-development, the extreme consequences of which are being felt amongst the poor people in the rural areas. The formal educational systems, with universities and other higher education institutions as apex institutions, have contributed to and legitimised the prosperity of a small minority which has an urban and western orientation, and is able to make it in the system. The vast majority that participates in the educational and development processes does so at a perpetual disadvantage. It gets alienated from its cultural and physical roots and is hooked on to the values and aspirations for goals which it can never attain. And this is happening at a time when there are serious questions whether globally mankind can afford the level and kind of development that has been taken for granted in the industrialised nations of Western Europe.

At this juncture we in India might remind ourselves that from a moral, humanist, quality of life, if not environmental, standpoint, the concerns about the nature of development and education were very much part of the debates about society in pre-independence India. Certain external compulsions and inner confusions have led us along the pre-ordained, so called modern path. Once again it is necessary to take our bearings and bring to the fore the questions about values and directions.

The Root Cause

Taking bearings when one is lost requires as a first step an understanding of where, how and why one has gone astray. Thus the first question to be asked is: Why is it that the Colleges and Universities in India have generally failed to involve themselves in the national development thinking and planning and have remained alien islands in the communities and areas of their location.

To seek an answer we have to look to the basic structures and modes of functioning of these institutions in the socio-economy of the post-colonial formations. In these societies with their colonial legacy of close links between education and lucrative state job opportunities, education is a profitable personal investment with high private rates of return. It is these private ends that ultimately help to shape educational policy through political pressure leading amongst other things, to expansion in higher education regardless of its social and developmental usefulness. Of course, the higher education dice is loaded in favour of the urbanised and already educated. The vast majority participates in the game taking its chance and writing off the investment when they are unable to win. In the process they subsidize the machinery that carries on the game, as does the state through increasingly heavy investment of its resources. The net result is the support by the majority through private and public funds, to the preparation and selection of a few for social and economic privilege. In this manner the system not only caters, almost exclusively, to private gain and opportunity, it is also weighted in favour of a small minority and is thus inequitable. It is particularly so in relation to the situation of the rural communities and the weaker sections amongst them.

Only a drastic re-conceptualization and re-orientation of the role of universities and colleges can alter this patently unjust and unproductive situation.

To put it bluntly: Only when the universities and colleges become organised and function primarily as centres for the need-based further and continuing education of working adults in rural and urban areas, only then can they claim to have relevance to the developmental educational needs of the contemporary society in this country.

Role and Responsibility of the Universities

This re-defining of the objectives and role of the University in our times and its re-organisation cannot be accomplished by the University alone. It requires as a precondition certain basic changes in the recruitment and training policies of the State which is the major employer of the products of the Universities. The state has to devise selection procedures that ensure not only talent and aptitude but also social commitment. These have to be of such a nature as would afford opportunity and eligibility immediately following higher secondary schooling. In this manner the function of the university and college education as preparation and waiting phase for job selection has to be eliminated. This does not mean there should not be any undergraduates at the universities but these would be those who are genuinely interested in the academic pursuits of particular disciplines for research and for teaching. In the nature of things their numbers will be limited. They would work with the staff who have particular aptitudes for teaching and research.

Relieved of the unmanageable pressure of the numbers of undergraduates, the universities can make their resources available for the education of the masses. Here they have to come down from their ivory towers, down to earth amongst the people and gain an understanding of their educational needs. They cannot expect the people to come up to their sophistications and sophistry which in any case is not much use to the society in its day to day functioning and its development. Yet people, working people, young and old, men and women need education in every conceivable sphere of human endeavour to make their lives a little better, to solve innumerable problems, to satisfy higher purposes. Every farmer would like to have rational and reliable understanding of the natural processes he has to reckon with in his work. Whether we believe it or not, he would like to have a better control over his health and to manage his family situation properly. He too would like to have a share in shaping the destiny of the particular community he is a part of. All these require knowledge and understanding and skills. These are to be gained through education, through further education and through continuing education. It is the responsibility of the universities, the seats of learning, the seekers of truth, to involve themselves in making education available to the people.

As has been indicated above, serving this need requires a major redefinition of the role of University in a society like ours. As constituted and functioning at present, the university is too 'closed' an institution. University has to 'open' itself in many respects if it has to come close to people and their development needs. First of all the university has to visualize its campus in 'open' terms. It has to locate its educational facilities where the people are in their daily living, in the community-centres, and in the market places and in the public forums. Secondly, it has to lower its sights in terms of eligibility for its education and related to this it has to modify and simplify its curricula and teaching procedures to meet the needs of working adults who have had limited schooling. Thirdly, the university has to be 'open' in terms of the patterns in which the working people will relate to its facilities. It is now being widely recognised that the most promising and fruitful approaches in education from developmental point of view are those that are being called 'non-formal'. Much of the progress in the developed countries would not have been possible unless this parellel systems of out-of-school education was made available through the adult, continuing education and extension activities of the universities and colleges. In our country we have not lacked the realisation that peoples' education has to play a key role in promoting development. However, there has been a singular lack of commitment by our higher educational institutions towards this end.

Conclusion

This is not the place to present any blue-prints for the suggested direction of change. Once the sights are readjusted and new set of objectives defined, there is no lack of models from which one can learn and find application for one's own situation. Over the centuries and across a variety of cultural situations the functioning of universities has undergone fundamental changes without abandoning intellectual rigour and pursuit of creative excellence for which the universities have stood through the ages. Unfortunately, this has not happened in India. As an outside observer describes "Despite three commissions, the Indian universities have not been able to extricate themselves from their own brief history; with a few notable exceptions they remain examining bodies. As their numbers multiply their academic standards do not improve... and something even more serious than this happens: they remain alien implantations, not integrated into the New India as the writers of Radhakrishnan Report hoped they might be." He attributes the failure amonsgt other factors to the decisions that were made in the early 19th century when the modern universities came into being. However, today this history cannot be made an excuse for inaction. The continuance of the existing patterns seems to be a reflection of a lack of will to change which is related to the self-serving nature of the academic bodies. It is significant that the two major departures from the standard university pattern, the Vidyapeeths and the Rural Institutes have both regressed into the old system. This is because, instead of emerging as alternatives concerned with the developmental education of working people, they tried to imitate, match and seek legitimacy within the formal system. This is what is known euphemistically as 'maintaining standards'. Of course, always the assumption is that there are only one set of standards and one maner of judging excellence. In this way the hope of new emergences and experiments has been thwarted by the uni-dimensional and class-based concepts of intellectual pursuit. The nature of man in society and the developmental needs are varied and many-sided and educational institutions have to provide for the flowering of many types of excellences. Further, our higher education has been too closely geared to and determined by the administrative culture of the State.

The universities have for too long been captives to the tradition of training men for the administrative machine, they have for too long neglected the training of the 'vital power for the machine', the people. It is time this lop-sided emphasis was corrected.

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Teaching in a Poly-Cultural Context: Lessons from Concept, Trends and Developments in Some Relevant Foundation Disciplines

M. KUNDU

India, with its innumerable language families, ethnic groups and cultural patterns, presents a unique case of cultural pluralism. Consequently, in most cases teaching is bound to be either bicultural or poly-cultural. But in practice, it is always monocultural, based on the cultures of the mainstream dominant groups. Take the case of tribal learners: the typical school with its urban middleclass values to which all instructional materials are oriented, its medium of instruction, system of evaluation and non-tribal teachers, is essentially alien to tribal pupils. To a lesser degree, similar is the case with linguistic minority group learners living in the boarder areas of each state, and learners who belong to other socio-economically backward classes. No system of education can be entirely bicultural or polycultural. Naturally, the mainstream culture will have a greater share. But attempts should be made to reduce the cultural gap. The education planner, the textbook writer and the teacher should be able to come out of their cocoons of ethno-centrism and contribute jointly to reduce this cultural gap. The education planner, while planning should see that the minority culture groups are not at a disadvantage; the textbook writer should avoid ideas, concepts and themes which will cause cultural conflict and problems for minority culture group learners and provide extra glossings and explanations for such themes and concepts foreign to the minority group in question; and the teacher, the real cross-cultural interpreter in action, should be able to solve the problems on the spot arising out of cross-cultural conflict in the classroom. But our conventional training programmes and courses hardly train them in cross-cultural understanding and multi-ethnic and multi-cultural approach to play their roles in establishing a cultural pluralistic society. The result is lack of cross-cultural understanding among culturally different groups leading to culture conflicts which raise their ugly heads in the form of communal riots, exploitation of minority groups, and demands for separate states. The present article makes an humble attempt to expose our curriculum planners, textbook writers and teachers to certain relevant concepts, trends and developments in anthropology, sociology, psychology and linguistics which will help them in getting rid of their ethnic prejudices and stereotypes and in gaining insight into other cultures. The researcher realizes that it is neither feasible nor desirable to train all such educational personnel in a multi-ethinic community like India to become linguists, anthropologists or sociologists. However, they can be acquainted with such relevant basic facts through popular lectures and work situations. In no case they should form a part of the existing theory of teacher education courses to be read only to be reproduced in examinations.

Awareness of the present socio-political development should serve as a backdrop to the knowledge of concepts in some ancillary foundation disciplines relevant to multi-cultural education. The present concept of democratic and welfare state and the concept of pluralistic society have affected the existing dominat-minority relationship and, in consequence, have changed the attitude of the dominant group towards culturally different minority groups. The earlier approach to them popularly termed as the 'melting-pot' approach in America, which wanted them to be completely assimilated into the mainstream culture has been replaced by an approach of cultural pluralism, which expects them to maintain their own culture and heritage, aptly represented by the metaphor of 'the Saladbowl' (Saville-Troike; 1976). Another fact that has to be taken into account is the occurrence of ethnic revitalization movements all over the world by culturally different ethnic minority groups who wanted their national origins, life-styles and languages to be acknowledged and respected. As a result, the monocultural curriculum in education is fast ceasing to exist. India cannot keep herself away from this world-wide trend. This necessitates special training for our educational personnel in multi-cultural and multi-ethnic approach to equip them to cope with the problems arising out of the fast emerging multi-ethnic community. A part of such training constitutes exposure to certain basic facts in some foundation disciplines which are relevant for multi-cultural education.

Anthropology

Some basic facts of anthropology, more particularly, of cultural anthropology, are very relevant to poly-cultural education. One of them is the importance of culture. The culture of a people includes all the systems, techniques and tools which make up their ways of life. Both language and culture have great influence on people. Culture conditions their way of looking at the world, as enunciated in the Sapir-Whorf Hypothesis. [An excellent study is given by Pinxton (1976)] Whorf has proved this citing evidences from the Hopi language. To him, even thinking is not psychological but cultural (Carroll. 1962:57-65). Thus innumerable problems are caused if the educational system is based on a culture, different from that of the learner, if the teachers belong to different language and culture, and if the medium of instruction is not the mother tongue of the learner. This has always been the case with most of the culturally different minority group learners in India. This often leads to cultural conflicts, cited as one of the major variables in the poor performance of culturally different learners in schools. Realizing the importance of culture in education, Salem and Salem (1973) propose the following six realities that the school should consider while teaching culturally different children, which have also great relevance for education personnel in India:

(1) Culture influences every aspect of learning.
(2) Culture influences ways of establishing rapport.
(3) Culture influences communication.
(4) Culture influences what educational variables are going to be effective.
(5) Culture influences value orientation.
(6) Culture affects teaching methods.

Inspite of his good intentions the teacher often misunderstands his culturally different pupils due to his lack of insight into and knowledge of their culture. The Negro children, for instance, learn to show respect by not looking directly to the eyes of persons with whom they are talking, while this is interpreted by White teachers as lack of interest in what is being said. This is just one example from many to be found in any multi-ethnic school or community.

Another concept of cultural anthropology, which has great relevance for poly-cultural education, is the concept of cultural relativity, a theoretical equality among the cultures of the world. No culture is inferior or superior; each should be viewed as a complete system having an integrity of its own which is appropriate for its own members.

Sociology

Systematic study of intergroup relation, especially the dominant-minority form, constitutes an important part of sociology. A detailed study of the dynamics of majority dominance through categorical and social discrimination and the minority response to such dominance through stabilized accommodation and acculturation, provide relevant facts for multi-cultural education. An important part of this is the study of stereotypes, particularly, ethnic stereotypes. These are fixed attitudes of one ethnic group towards other ethnic groups primarily based on prejudice. Social typing is natural and inevitable. It is one of our major means of organizing life. When these are based on prejudices and used as mechanism to establish the myth of racial and cultural superiority, they turn to be ethnic stereotypes. The curriculum designers, the textbook writers and the teachers have ethnic stereotypes of minority culturally different groups which they share with their own culture groups. Ethnic stereotypes are transmitted across generations as a part of the accumulated knowledge of the society. Hardly a person can grow up in a society without learning them. The society has 'supporting mechanisms' to maintain and foster these ethnic attitudes. The primary institutions for the diffusion of these ethnic stereotypes are the family and school. The family operates as the major source for the transmission of ethnic prejudices as parents communicate their ethnic attitudes to their children. The school, when based on the dominant culture, also helps in their transmission. This causes major educational hurdles for different culture group learners. These ethnic stereotypes are also the causes behind most of the communal tensions and riots. Now the question is—If they are so deeply entrenched in us causing major obstacles in cross-cultural understanding, how to get rid of them? The socio-psychologists suggest that one way of getting rid of them is to adapt a critical attitude to them. Most of them have no basis on truth and are used as instruments to establish the myth of cultural superiority. Constant attempt to verify them against truth will reduce their credibility and impact on the person concerned. Take for instance, the stereotype of tribals among non-tribals, that their culture is inferior. If one verifies this against facts and comes to know more and more about the positive aspects of tribal culture and its contribution to mainstream non-tribal culture, the stereotype will lose credibility for the person. Adoption of a critical attitude to them includes becoming conscious of one's own tendency to stereotype. Ethnic stereotypes are so natural for us that they often take us unaware. One has to be always at his guard against this tendency. Getting rid of them will help in understanding other cultures better. Thus, our curriculum planner, textbook writer and teachers should be exposed to the social psychology of stereotyping to get rid of their own stereotyping tendency thereby understanding other cultures better.

Psychology

The culturally disadvantaged learners are found to have low self-image and negative attitude to their language and culture. The system of education based on urban middle class dominant culture is often responsible for this. The existing textbooks in India, for instance, reflect upper or uppermiddle-class culture and values. The "textbook families" with their customs and traditions, big bunglows and well-furnished rooms (obvious from pictorial illustrations) create in disadvantaged learners, who do not grow up in families and settings described in these textbooks, a negative self-image and negative attitude towards his own home and culture (Kundu, 1980).

But studies in psychology have stressed the importance of personality traits such as positive self-image and sociability as major variables in language acquisition and learning. Hyde (1977), for instance, examined the relationship between self-esteem and oral production and found a high correlation between global self-esteem and ratings of oral production.

In order to understand the culturally different learner better and to make provision in the existing systems to improve their self-image and attitude to their culture, the education personnels should be acquainted with the recent developments in psychology, particularly, in humanistic psychology. This humanistic movement in psychology is often referred to as the 'third force' different from two earlier psychological movements: classical Freudianism and Positivisitc Behaviourism. They criticise Positivistic Behaviourism's strees on observable responses and Classical Freudianism's strees on the built-in opposition between the needs of the individual and those of the society. They, on the other hand, believe in setting up conditions in which the needs of the individual becomes synonymous with those of the society. Their important topics of study constitute some of the distinguishing features of man such as choice, will, conceptual thought, imagination, introspection, creativity etc. This humanistic psychology has generated new concepts of learning, teaching and education which are often differently termed 'affective', 'confluent', 'psychological' and 'humanistic', 'education'. The chief goal of such education is the creation of better human beings through self-actualization, emphasizing self-discovery, introspection, self-esteem and self-identity. These humanistic approach and techniques have proved to be a cure for many of the disabilities of culturally different learner.

Linguistics

Some concepts, trends and developments in linguistics and in its branches such as *Sociolinguistics, Applied Linguistics* and *Psycholinguistics* are quite relevant for multi-cultural education. One of them is the concept of language relativity, like that of cultural relativity in anthropology, which states that no language is inferior or superior. Each is an effective system of communication for its own speakers. This concept has been able to dispel earlier belief that the languages of cultural minority groups are inferior. Linguists have proved with extensive evidences that even the least prestigious language varieties have revealed an impressively complex set of structural patterns. The Eskimo language, for instance, has twelve words for 'snow' which describe different varieties of snow, whereas English has only three. Similar examples can be cited from tribal languages of India to disprove the notion that these languages are inferior to non-tribal dominant languages of India. Take for instance, Oriya has only one word for 'Sal leaf' whereas the Santāli language has several different words to distinguish its different kinds. Some verbs in Santali change their forms depending on the object which is not the case in Oriya (Kundu 1982). This proves that no interlanguage comparison is possible to prove that one language is superior or inferior to other.

Developments in *Sociolinguistics* has disproved the earlier Deficit Theory which appears as the concept of verbal deprivation. Labov (1972), for instance, working on Negro dialects has established the 'logic of non-standard English' and has proved that the concept of verbal deprivation has no basis in social reality. Even Bernstein (1970) who posited the Restricted Code (relating to the working class) and Elaborated Code (relating to the middle class) has modified his earlier theory used as a support by many for Deficit Theory, and has become highly critical of compensatory education, which was partly generated by his earlier theory. All these studies are relevant in settling the deficit-difference controversy and in shifting the cause of poor performance of ethnic minority learners from their family and environment to the school, the system of education and to the society as a whole.

Recent developments in *Applied Linguistics*, particularly, in the area of error analysis, have disproved the earlier concept of mother tongue interference in learning subsequent languages. From all the data currently available, it appears that mother tongue or the first language is really a help, rather than a hindrance (Dulan and Burt. 1978). Linguists agree that it is easy and advisable to develop the skills of reading and writing in the mother tongue of the learner first which can later be transferred to other languages learned subsequently. A learner who already knows how to read in one language, for instance, does not have to struggle with the problems of reading all over again. Where the languages are closely related, there is almost complete transfer of reading ability. Even when the languages are entirely unrelated, the essential process involved in decoding graphic symbols remains the same. The language planners, if exposed to these developments in applied linguistics, will be able to get rid of their ethnocentric belief that education through tribal or ethnic minority languages for ethnic minority learners will be a hindrance rather than a help.

Another development in the field, which is relevant for multi-cultural education, is the change of attitude towards bilinguals. The early writers on bilingualism tended to link bilingualism with lowered intelligence. Weinreich (1953) presents numerous examples of the fears that were popularly entertained regarding the dangers of bilingualism: that it could lead to stuttering and left-handedness; that bilinguals are likely to suffer from 'conceptual poverty' etc., etc. Bilingualism was referred to as a 'disadvantage', 'a handicap' and 'a problem'. But in comparing bilinguals with monolinguals, early writers failed to control other factors such as socio-economic background, and educational opportunities. Lambert and Peale (1962) conducted an investigation on the effects of bilingualism in the Canadian setting. They expected to find the bilinguals deficient. But to their surprise, French-English bilingual children scored significantly higher than carefully matched monolinguals on both verbal and non-verbal measures of intelligence. Further, the test results suggested that bilinguals had a more diversified structure of intelligence and greater flexibility of thought. This finding has further been confirmed by numerous, carefully conducted researches around the world. (A good account of this is given in Lambert: 1978). It has further been proved that early bilingualism increases the facility for acquiring new languages later in life (Segalowitz: 1977). Now it is an accepted fact that any one who speaks more than one languages and participates in more than one cultures is a privileged individual. He has been liberated from the intellectual provincialism of a single culture and should be more tolerant of those from other cultures. Exposure to these developments will help our planners in education, textbook writers and teachers to change their attitudes to culture minority groups most of whom are bilingual by situation, and will inspire them to be bilinguals themselves, which is going to be a way of life all over the world.

To conclude, these are only bare statement of some concepts, trends and developments in some ancillary fields of education which have great relevance for multi-cultural education, but not in a 'cut and dried' form for immediate use for teacher education and workshops in cultures. However, they can be used by curriculum designers and textbook writers to prepare interesting lectures, articles and lessons for use in teaching in a polycultural context. This multi-ethnic and multi-cultural approach should also form a part of our education to provide our children necessary training to become worthy citizens of a cultural pluralistic society.

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Notes from Research

HAVE 'QUESTION BANKS' IMPROVED THE QUALITY OF QUESTION PAPERS?

Examination which is an inevitable part of the teaching-learning system has been a challenging puzzle to the educationists for quite sometime. Like the Rubik cube, the examintion puzzle has many faces and the solution as elusive. Various innovations like internal evaluation, continuous assessment, grading system, using objective type questions, setting up question banks etc., have been tried. Yet, an acceptable solution to the examination is no-where in sight.

Many examination reform units have been set up in various institutions to study different aspects of examination. In keeping with the significance of the problem, studies in the area of examination have been quite substantial. Passi and Sansanwal (1979) classify these studies under various areas like achievement tests, diagnostic tests, factors affecting achievement, failures etc. Majority of the studies centre around achievements in different subjects. There are some studies on the relatonship between internal and external evaluation.

One of the major areas of research has been the inter-rater reliability in assessing the students performance in the examinations. Studies of Harper (1970), Jhaveri and Patel (1968), Mishra (1970), Taylor (1964), Deo (1974) and others pertaining to the inter-examiner reliability in assessing subjects ranging from history to mathematics has shown the high inconsistency prevalent in these ratings. It is commonly believed that assessment in technical subjects should be more consistent and reliable. The study of Balu and Chandran (1979) has shown that it is not so.

No definite explanations have been offered for this inconsistency. Perhaps, one of the possible causes could be in the inconsistency of the rating of the question paper itself, among examiners. If the examiners do not interpret the question papers in the same way, naturally, there is bound to be inconsistency in the rating of the answer scripts, for after all the question paper is the tool of measurement. If the tool itself is defective, the measurement is bound to be faulty.

It should be noted that whatever be the system of examination, whether it be internal evaluation or external evaluation, continuous assessment or end of the year examination, grading system or awarding of marks, the crux of the examination is the question paper itself. It is strange that very few studies have been reported on the question paper and its nature.

In a study of university examination Chauhan (1967) found that of the students who fail, a large proportion fails not because of not knowing the subject matter but because of various external factors, one of which is defective question papers. In another study Malhotra (1972) while studying the effectiveness of question papers of matriculation examinations, found that the question papers had many defects with respect to difficulty level, coverage and weightage. Lele, et al (1963) analysing the question paprs reports that only one-fifth of the total questions were good, whereas the rest were poor discriminators. Rao (1968) investigating the standard XI examination found that in many cases the question papers were not properly balanced as far as the difficulty value of the items was concerned. The question papers failed to discriminate pupils of high from low ability. Realising the importance of the quality of the question paper as a major component of examination reform, the question bank system has been introduced in a number of places to improve the traditional examination pattern. The setting up of question banks were expected;

(1) to standardise the terminal examination question papers;
(2) to eliminate vagueness in questions;
(3) to avoid ambiguity in questions;
(4) to evolve identical sets of question papers for different batches of students;
(5) to enable the teacher to have a clear outline of the subject content to be dealt with; and
(6) to provide an effective testing procedure for the expected learning outcomes.

There has been a great emphasis on developing objective type of questions to be incorporated in the question banks as validating objective type of questions is comparatively straightforward. Question banks cannot be made of only objective type questions, for these questions do not lend themselves to the testing of all types of learning outcomes. Essay type or long answer questions are also required. These are very difficult to formulate precisely. It is also difficult to establish their validity and reliability because of the poor inter-rater reliability in grading the long answer questions.

Some question banks have been developed in a systematic manner. The items, especially, the objective type items are banked only after careful validation based on item analysis of actual data procured by testing the items. The facility index and discrimination index for each item is recorded to facilitate the teacher in selecting the items for inclusion in a question paper.

Unfortunately, all question banks are not developed on scientific principles, especially where long answer questions are included. An adhoc set of questions are pooled and placed in the so called 'question bank'. No efforts have been made to validate these items. This leads to undesirable outcomes. The students' interest in studying is reduced to learning answers to the questions in the question bank. Some teachers find this a convenient excuse for diluting their teaching to the dictation of notes to cover the questions in the question bank. Eventually, the examinations remain as unreliable as ever. The blame is put on the ineffectiveness of the question bank system itself, without realising that the system has not been operated properly. Decisions are made to discard the question bank system. This is like throwing the baby along with the bath water.

Before a decision is taken about discarding with or continuing a system, the system needs to be evaluated systematically based on information. This project was undertaken to evaluate whether the objective of setting up a question bank, namely, improving the quality of the question papers has been achieved. As this project pertains to the evaluation of question papers in the engineering subjects, it becomes all the more significant, for it is generally expected that question papers in science and engineering subjects are more precise and objective compared to the arts and social science subjects.

Objectives

The objectives of this project are : (i) to examine whether the question papers set from the 'question bank' are superior to the question papers set without the aid of the question bank, (ii) to examine the inter-rater reliability in assessing the quality of the question papers.

Methodology

The question papers for evaluation in this project were selected from the examinations conducted by one of the State Boards of Technical Education. In this state, all the question papers set after the introduction of the question bank had to be drawn from the questions that were available in the 'bank' without making any changes whatsoever in the questions.

The question papers selected were those given to the final year diploma students in Civil, Mechanical and Electrical engineering. The subjects selected were:

(i) Hydraulics and Hydraulic machinery in Civil Engineering;
(ii) Heat Power engineering in mechanical engineering; and
(iii) Electrical machines in electrical engineering.

The subjects were chosen as no major changes have been made in the syllabus in these subjects in the past ten years.

Five question papers were selected randomly in each subject from the pool of all available question papers in that subject in the five years preceding the introduction of the question bank system. Another five question papers in each subject were selected randomly from all the available question papers set after the introduction of the question bank system. Thus, in all ten question papers in each subject were selected for evaluation.

Based on a literature survey and discussion with teachers, eight characteristics desirable in any question paper were identified and their definitions oprationalised. A good question paper when reviewed as a whole is designed in such a way that it has:

(1) Discrimination Value (D.V.) :	It will be possible to discriminate between a high and low ability student. It possesses an acceptable discrimination value.
(2) Difficulty Index (D.I.) :	The questions are neither too difficult nor too easy. It possesses the required difficulty index (facility value).
(3) Content Coverage (C.C.) :	The content coverage of the syllabus is adequate.
(4) Choices Uniform (C.U.) :	The difficulty level of choices are uniform. All the questions have the same difficulty level.
(5) Learning Outcomes (L.O.) :	It is balanced in measuring all the learning outcomes of recall, comprehension, manipulation, interpretation, application and problem solving.
(6) Time Uniform (T.U.) :	The time required to answer the choices are uniform. All questions require about the same time for answering.
(7) Wording Clarity (W.C.) :	The wordings and drections of the questions are clear and unambiguous.
(8) Time Allotted (T.A.) :	Time allotted to answer the question paper is adequate.

The question papers selected were evaluated for these eight characteristics on a three point rating scale, namely, characteristic fully incorporated, partially incorporated, not at all incorporated and they were scored from 3 to 1, the higher score indicating good quality of the question paper.

The ten question papers selected were mixed up randomly so that the rater would not know which question papers were before the question bank and which question papers were from the question bank.

Data Collection

Twenty senior teachers who have been teaching these subjects for quite sometime were selected and requested to evaluate the question papers in their respective subjects. The teachers were provided with the following:

(1) A set of ten question papers, numbered randomly;
(2) A proforma for rating;
(3) Directions for filling the proforma;
(4) List of characteristics identified and defined; and
(5) A copy of the syllabus for guidance.

An example rating was also shown to give some guidance and maintain uniformity in rating.

Ratings were finally obtained from 16 teachers of civil engineering, 12 teachers of mechanical engineering and 10 teachers of electrical engineering.

Results & Discussion

Comparison of Ratings before and after Question Bank: The frequency distribution of ratings given by the teachers for the various characteristics for all the ten question papers rated in the three disciplines of Civil, Mechanical and Electrical engineering are shown in Tables 1, 2 and 3 respectively. The total score obtained by each question paper is also shown. It is noticed that there is a wide variation in the ratings given by the teachers for the various characteristics. It is interesting to note that the question papers which get the highest ratings (C-7, M-10 and E-6) are those that have a relatively more consistent rating also. On the other hand, there is not much consistency in the ratings of the question papers getting the lowest ratings (C-1, M-4 and E-5). Perhaps, when a desirable characteristic is fully incorporated it is clearly recognised than when a characteristic is not so evident.

Table 4 shows the total and average ratings obtained for the question papers set before and after the question bank system in all the three disciplines. It is noticed that in the electrical and civil papers, there is no significant difference in the ratings obtained by the two sets of question papers. In fact, in the electrical discipline, the question papers set after the question bank gets a lower average of 84.6, compared to the 86.8 given to the before question bank papers. In the Civil discipline the average score of 90.7 given to the after question bank papers is marginally higher than the 88·6 obtained by before question bank papers. In the mechanical discipline the average ratings obtained by the after question bank papers of 88, is significantly larger than the 74·4 obtained by before question bank papers. Perhaps, in the mechanical discipline, the question papers included in the 'question bank' are relatively superior in quality compared to the earlier question papers.

It is interesting to note that the average ratings given to the question papers in all the three disciplines are close to each other ranging from 84·6 to 90·7 except the 74·4 obtained by the before question bank mechanical paper.

Inter-rater reliability

To check to what extent these findings could be generalised, the inter-rater reliability in the ratings of the question papers were worked out using the Kendall's coefficient of concordance, W. The W. value calculated for the three disciplines for before and after question bank questions and for the total set of questions are shown in Table 5.

Table 1

THE FREQUENCY DISTRIBUTION OF RATINGS GIVEN BY THE TEACHERS FOR VARIOUS CHARACTERISTICS FOR THE CIVIL ENGINEERING QUESTION PAPERS SET BEFORE (B) AND AFTER (A) THE QUESTION BANK

	No.	*D.V.*			*D.I.*			*C.C.*			*C.U.*			*L.O.*			*T.U.*			*W.C.*			*T.A.*			*Total*
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	*Index*
B	C1	2	8	5	2	4	10	7	7	1	8	4	3	5	7	3	3	5	7	1	2	12	1	2	11	263
A	C2	2	7	6	1	10	5	3	6	5	3	4	8	3	5	7	2	6	7	1	1	13	1	3	10	287
A	C3	3	6	9	4	5	7	4	3	8	3	5	7	3	4	8	2	5	8	1	3	11	4	1	9	283
B	C4	1	2	12	2	3	10	0	5	10	2	5	8	2	3	10	6	5	5	0	5	10	3	7	4	293
B	C5	2	6	7	3	5	7	1	5	9	1	4	10	3	4	8	3	5	8	2	3	10	5	3	6	285
B	C6	1	5	9	2	8	5	1	6	8	2	5	9	2	6	7	3	8	4	2	2	11	3	5	6	282
A	C7	0	5	10	0	0	15	0	7	8	1	7	8	3	6	5	1	4	10	0	1	14	0	2	12	316
A	C8	1	8	7	2	6	7	5	5	5	3	6	6	5	5	5	2	9	4	1	1	13	2	3	9	275
B	C9	1	4	10	2	2	11	1	8	7	2	7	6	3	4	8	2	6	7	0	4	11	4	3	8	295
A	C10	3	3	9	2	5	8	2	7	6	3	4	8	2	10	4	1	8	6	0	1	14	1	2	11	292

Note : *No. of raters* = 17

D.V. — *Discrimination Value*
D.I. — *Difficulty Index*
C.C. — *Content Coverage*
C.U. — *Choices Uniform*
L.O. — *Learning Outcomes*
T.U. — *Time Uniform*
W.C. — *Wording Clarity*
T.A. — *Time Allotted*

Table 2

THE FREQUENCY DISTRIBUTION OF RATINGS GIVEN BY THE TEACHERS FOR VARIOUS CHARACTERISTICS FOR THE MECHANICAL ENGINEERING QUESTION PAPERS SET BEFORE (B) AND AFTER (A) THE QUESTION BANK

	No.	D.V.			D.I.			C.C.			C.U.			L.O.			T.U.			W.C.			T.A.			Total
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	Index
A	M1	2	6	3	1	6	5	2	5	5	2	3	7	2	7	2	4	2	6	1	2	9	0	2	10	221
A	M2	2	7	3	5	3	4	2	5	5	4	4	4	2	7	3	4	2	6	4	1	7	1	4	7	207
B	M3	3	5	4	0	7	5	2	7	3	3	4	4	2	3	6	4	3	5	1	3	7	2	4	6	208
B	M4	5	3	2	2	4	3	5	3	1	3	2	3	2	6	2	2	6	1	2	1	6	4	4	2	143
B	M5	2	6	2	2	5	3	5	4	2	4	5	2	2	6	3	3	4	4	2	2	7	4	3	4	175
B	M6	2	3	6	0	5	6	3	3	5	4	4	4	4	5	2	5	3	3	3	4	4	4	5	2	185
A	M7	4	4	4	5	4	3	3	4	4	4	4	4	1	5	5	1	5	6	2	4	6	2	4	6	204
A	M8	2	6	4	3	3	5	3	5	4	5	5	2	2	7	3	2	6	4	0	6	5	2	4	6	202
B	M9	2	4	4	1	7	2	4	3	3	1	6	3	0	7	3	3	2	5	0	3	7	1	5	5	182
A	M10	0	5	7	2	7	2	2	4	5	3	5	4	0	3	9	0	4	8	1	2	8	4	3	5	222

Note : *No. of raters* = 12

Table 3

THE FREQUENCY DISTRIBUTION OF RATINGS GIVEN BY THE TEACHERS FOR VARIOUS CHARACTERISTICS FOR THE ELECTRICAL ENGINEERING QUESTION PAPERS SET BEFORE (B) AND AFTER (A) THE QUESTION BANK

	No.	*D.V.*			*D.I.*			*C.C.*			*C.U.*			*L.O.*			*T.U.*			*W.C.*			*T.A.*			*Total*
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	*Index*
B	E1	1	3	5	2	5	2	1	2	6	2	2	5	1	4	4	4	3	2	1	2	6	3	2	3	160
B	E2	4	2	3	3	1	5	2	3	4	3	2	4	2	3	4	2	2	5	1	0	8	3	4	2	159
A	E3	2	3	4	0	7	2	2	4	3	1	4	4	3	4	2	1	6	2	0	4	5	2	2	5	160
B	E4	1	4	5	0	4	6	1	3	6	4	3	3	0	3	7	5	3	2	0	3	7	4	1	5	186
A	E5	4	5	0	3	5	1	2	5	1	2	3	4	2	4	3	1	4	4	2	2	5	2	0	7	150
B	E6	0	1	8	0	1	8	0	1	7	1	3	5	0	2	7	0	4	5	0	0	9	3	1	5	192
B	E7	1	5	4	2	5	3	3	3	4	4	3	3	3	2	4	3	4	3	1	3	6	1	4	4	171
A	E8	1	2	7	2	3	5	3	2	5	1	5	4	1	5	4	2	3	5	2	3	5	1	4	4	184
A	E9	1	6	3	0	7	3	2	5	3	4	4	2	1	7	2	1	7	2	1	4	5	0	5	4	172
A	E10	0	9	1	1	4	5	3	5	2	4	2	4	0	9	1	1	5	4	1	0	9	0	3	6	180

Note : *No. of raters* = 10

Table 4

TOTAL AND AVERAGE RATINGS OBTAINED FOR THE QUESTION PAPERS SET BEFORE AND AFTER THE QUESTION BANK (QB) SYSTEM FOR ALL THE THREE DISCIPLINES

Discipline	*Before QB*		*After QB*	
	Total	*AVE*	*Total*	*AVE*
CIVIL N = 16	1418	88·6	1453	90·7
MECHANICAL N = 12	893	74·4	1056	88·0
ELECTRICAL N = 10	868	86·8	846	84·6

Table 5

THE KENDALL'S CO-EFFICIENT OF CONCORDANCE (W) FOR THE INTER-RATER RELIABILITY IN RATING THE QUESTION PAPERS SET BEFORE AND AFTER THE QUESTION BANK IN ALL THE THREE DISCIPLINES

Discipline	*W*		
	Before QB	*After QB*	*Total set*
CIVIL N = 16	0·095	0·154*	0·122*
MECHANICAL N = 12	0·155	0·07	0·102
ELECTRICAL N = 10	0·237*	0·111	0·216*

Note: **Significant at :05 level.*

It is noticed that there are only four values which are significant at the 5% level. The civil engineering question papers not only get higher ratings for their quality, but there seems to be greater inter-rater reliability too. While there is no inter-rater reliability with respect to the question papers set before the question bank, there is a significant inter-rater reliability in the question papers set after the question bank. On the other hand, in the electrical question paper there is greater inter-rater reliability in the question papers set before the question bank and it is also noticed that the question papers set before the question bank has a marginally higher rating. In the mechanical question paper there is no inter-rater reliability at all.

The next step in the analysis was to find out whether there was any particular characteristics in which atleast majority of the raters agreed. Table 6 shows the ratings given by the percentage of teachers for each characteristic for the question paper set befoe and after the question bank. There is not much difference in the ratings given by these two sets of question papers. (See Table 6).

Table 6

RATINGS GIVEN BY PERCENTAGE OF TEACHERS FOR EACH CHARACTERISTIC FOR THE QUESTION PAPERS SET BEFORE AND AFTER THE QUESTION BANK AND FOR THE TOTAL SET OF QUESTION PAPERS

		D.V.			*D.I.*			*C.C.*			*C.U.*			*L.O.*			*T.U.*			*W.C.*			*T.A.*		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
DISCIPLINE																									
Civil	Before	9	34	57	14	29	57	13	41	46	20	33	47	20	32	48	22	38	40	7	21	72	23	28	49
	After	11	37	52	12	34	54	19	38	43	17	34	49	21	40	39	11	43	46	4	9	87	11	16	73
	Total	10	35	55	13	31	56	16	39	45	18	34	48	22	36	42	16	40	44	5	15	80	17	22	61
Mechanical	Before	26	40	34	10	54	36	36	38	26	29	40	31	19	51	30	32	34	34	15	25	60	27	38	35
	After	17	47	36	28	40	32	21	40	39	30	35	35	12	50	38	18	32	50	14	26	60	15	28	57
	Total	21	44	35	19	46	35	28	39	33	29	37	34	15	50	35	25	33	42	15	25	60	21	33	46
Electrical	Before	15	32	53	15	34	51	15	26	59	30	28	42	13	30	57	30	43	36	6	17	77	31	27	42
	After	17	52	31	12	54	34	26	45	29	24	38	38	15	60	25	12	52	36	12	27	61	11	31	58
	Total	16	42	42	14	44	42	20	35	44	27	33	40	14	46	40	21	43	36	10	22	68	21	29	50

Note : 1. *Characteristic not at all incorporated.*
2. *Characterisitic partially incorporated.*
3. *Characteristic fully incorporated.*

The wide spread in the percentage of teachers giving different ratings for the various characteristics, again demonstrates the high inconsistency in the ratings of the quality of the question papers. The only characteristic which seems to get a relatively consistent rating as indicated by the comparatively large percentage of raters (over 60% in all the three disciplines) giving a high rating is for the characteristic (W.C.) 'wording clarity'. Perhaps, raters find this characteristic evident and most objectively ratable. The only other characteristic getting a high rating by over 60% of the teachers is the adequacy of time allotted (T.A.) in the Civil Engineering discipline. There are only few other characteristics for which more than 50% of the teachers have given the same rating. The characteristics discrimination value (D.V.), difficulty index (D.I.) and adequacy of time allotted (T.A.) in the civil discipline have been rated by more than 50% of teachers as fully incorporated in the question paper. The spread of ratings given to the characteristics content coverage (C.C.) and choices uniformity (C.U.) is very wide as there is not a signle instance where atleast 50% of the teachers agree. In general, it is noticed that there is not much agreement in the ratings given to the various characteristics and that the rating indicates only the mediocre quality of the question papers.

It is very difficult to draw any definite conclusions based on these inconsistent findings. The weak inter-rater reliability in rating the quality of the question papers, indicates the subjective nature of interpreting the question papers even by experienced teachers. The limitation of this study is that no attempt was made to establish the reliability of the ratings given by the teachers. Thus, it is not possible to say whether the inconsistency is due to examiner variability or due to the nature of the question papers themselves. Further study is required on this aspect.

Implications of the Study

This study raises some very basic questions. The ultimate aim of any examination is to evaluate the performance of the examinee objectively and reliably. The question paper is only a tool for this purpose. If the tool itself is not dependable, measurements based on the tool has no value. Improving the quality of the question papers themselves is the basic requirement.

The concept of the question bank is meant for this purpose. Unless the 'question banks' are properly constituted and utilised they will not serve the purpose for which they were established. It would be unscientific to discard the question bank system itself because it has not served the purpose. It should be understood that the system has not worked because it has not been constituted and operated properly.

Depending solely on objective type questions in the question bank will not be very helpful. Objective type questions will be useful only where competitive examination for selection purposes are held. In these situations the phenomenon of copying is not there. Whereas in promotion situations like school examinations, objective type of questions have fallen into disrepute because of the unfair means adopted by students.

It is difficult to formulate questions whether they be objective type or the long answer type. Both types of questions are necessary for different purposes. Questions should be judiciously selected to meet the purpose.

As pointed out earlier it is easier to validate objective type questions. Validating long answer questions are very difficult. Question paper setters need to be trained to look for the desirable characteristics in a question paper. It was noticed that there was a greater inter-rater reliability in those question papers which were rated as having the desirable characteristics fully incorporated. This indicates that improving the quality of the question papers should lead to greater inter-rater reliability.

Another aspect that could facilitate greater inter-rater reliability and improve validity would be to structure the question papers more precisely, so that there is no ambiguity in the interpretation of the question papers.

Ways and means have to be found to improve the quality of the questions, whether they be the objective type or long answer type, before they are incorporated into the question bank, so that the system can operate effectively. Further, research is required in this very important area of examination reform.

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A METHOD OF EQUATING MARKS FROM DIFFERENT BOARDS

The selection of students passing out from different Boards and seeking admission to various courses of study is becoming an increasingly serious problem and needs more attention than has been given to it so far. This problem affects the students going for higher education or for professional courses, since getting admitted to courses in colleges in their home states is difficult due to increasing competition. It is being noticed that students passing Intermediate/Higher Secondary Examinations of Boards seek admissions in the Universities/Institutes and Colleges located outside. There are different prodecures adopted for admission to Colleges and Institutes but they are invariably made on the basis of raw marks and the aggregate. As a criterion some would take the marks obtained in a single papar, some would take the total of the marks obtained in different papers of a single subject, and some would take the total of the marks obtained in various subjects in an examination. It is quite obvious that due to differences in syllabi and courses of the Boards and methods of evaluation, the raw marks are not comparable though the students seeking admissions may have the same percentage of marks. Further, some Boards may be lenient in their marking as against other Boards which are a bit strict with the result that students with higher abilities fail to get admission while the students with lower abilities, on account of a shade of difference in the percentage of marks, are successful in getting admissions.

A large body of teachers and educational administrators is not yet fully conscious of the subjectivity, unreliability and lack of validity of the examinations as conducted today. Talking of unreliability, we must clearly understand that the marks given by an examiner is something like a 'raw mark' and it is certainly different from his true mark. Such a raw mark is subject to an error which for some typical papers set at Boards/Universities is greater than 5 per cent. It means that when an examiner assigns a mark of 50, the true mark may be either above 55 or below 45 in fifty per cent of the cases.

It is more or less known to every body that a large number of Universities/Institutes admit students on the basis of raw marks and total aggregate obtained by the students in their previous examinations. There are a few universities/institutes which hold entrance examination tests for their different courses. But they too have been using the raw scores obtained by the students. While preparing the merit list for admission University/Institutes should use examination results only for the purpose for which they are intended. Since they are more or less considered achievement tests, they should not be considered as selection/admission tests. The marks obtained in the achievement tests which are designed to measure present level of knowledge, skills and competence etc. should not be the sole consideration while preparing merit lists for admitting the students to various courses. Moreover, test scores, like all types of measurements, physical as well as psychological, are not perfectly precise and should not be treated as such. Test scores therefore, should not be used as the sole determining factor for the admission of an applicant to an institution. It should be considered as one aspect of the description of an individual in this process. It is therefore necessary, even for those Universities/Institutes which are holding entrance examinations to view admission test scores as approximate and not exact indicators. This is a serious problem for institutes and colleges and from time to time they have been trying to solve this by certain ad hoc criterion. An attempt is being made in this paper to provide a scientific basis for comparing raw scores from different Boards. Most of the proposals are to convert the raw scores of individual students into group independenent scores.

Why is a Common Scale Necessary?

The raw scores from each test yield numbers that have no necessary comparability with numbers from another test. Many times we not only want comparable values from different tests but also values that have some standard meaning. If the same group of students has taken several tests, we often wish to compare a given student's performance on Tests A, B and C. For instance, the students who appear for the M.B.B.S. entrance examinations are usually given three different test papers namely physics, chemistry and Biology. Raw scores obtained in these tests are not satisfactory for achieving this comparison. How does a student's score of 64 in physics, 72 in chemistry compare with 58 in Biology? Before we can make this comparison, we need to know what the average performance of the group is and how widely spread out the scores are for each test. Only then we can say how 64 ranks among the physics scores, how 72 ranks among the Chemistry scrores and how 58 ranks among the Biology scores. Then we can compare ranks. No informed person would think of using raw scores as a basis of making direct comparisons among an individual's positions. Conversion of raw scores to values on some other common scale is very much essential. A similar concept is to be understood in terms of marks obtained in one Board and the difficulty met with in comparing these marks with the marks obtained in the same subject in another Board.

Procedures for Scaling the Raw Marks

Before some methods of scaling the marks are suggested, it will be interesting to mention a method which is being used in a particular institute for scaling the marks. Here the normalised aggregate percentage of each candidate is calculated with reference to the highest marks awarded in his Board/University in that examination and the merit list is prepared in the descending order of the normalised aggregate percentage. The assumption in this case is that the first rank student of one Board/Univesity is academically equivalent to the first rank student of another Board/University. That is to say that the normalised aggregate percentage of the top student from each Board/University is 100. This way the aggregate percentage of all candidates from different Boards/Universities are brought to the same base. For instance the normalised aggregate percentage of a student with 70% aggregate in the Inter Science examination from U.P. Board in 1979 where the aggregate percentage of the top student is 90·67% $= \frac{70}{90 \cdot 67} \times 100$? Similarly the normalised aggregate percentage of candidates from different Boards can be calculated and compared while preparing the merit list for admissions.

The assumption made in the above mentioned method that the first rank student of one Board/University is academically equaivalent to the first rank student of another Board/University is basically unfair. Referring to the example 70/90·67×100 normalised aggregate percentage of a student with raw mark 70. The standard error at 70 marks is different from standard error at 90·67 marks. Moreover, if many examiners are involved (and this is the usual case) standard error of one examiner is different from the standard error of another and so on. The values given in the above illustration normalise two error scores and therefore are not dependable. This means that the error in mark 70 and in mark 90·67 are one and the same and that this normalisation is fair. This is not true.

Suggested Methods

To deal with this problem some better methods are given below:

Percentile Ranking : A student's percentile rank describes his relative standing within a specified group. A percentile is any one of the ninety-nine points dividing a frequency distribution into one hundred groups of equal size. The scores which serve to identify a person's status within a specified group, may be expressed in a variety of forms. One convenient way of indicating the level of an individual's performance is to quote his percentile rank. This tells us what percentage of the group performed at a lower level. Thus if we compare a person's mark with those obtained by the group as a whole and find that, when there marks are arranged in rank order he is exactly half way down the list, he would be said to be at the 50th percentile. In other words 50% of the group were below him in the list. If he fared better than 80% of the group he would have a percentile rank of 80, and so on.

It is clear that this is a much more meaningful representation of an individual's performance than his total mark or percentage mark in an examination. An illustrative example for calculating the percentile ranks is given in Table I.

The percentile rank is finally calculated with the help of the following formula

$$\text{P.R.} = \frac{\text{cfm}}{\text{n}} \times 100$$

where cfm = Cumulative frequency of mid point
n = Total number of students

This can be done for:

(a) aggregate marks i.e. sum of marks in all subjects
(b) weighted aggregate
(c) individual subject

Thus when we use percentile ranks we can state how many people scored more or less than a particular individual which makes our statement more significant than the quotation of a total mark or percentage alone.

Z-Scores & T-Scores Method : This is a very simple and scientific method which may also be used while dealing with the problem in question. To determine the extent to which one individual's performance is better or worse than other's, we need to translate our

Table 1

PERCENTILE RANK CALCULATION

Marks (X)	*Frequency (f)*	*Cumulative Frequency (cf)*	*Cumulative Frequency of mid point (cfm)*	*Cumulative percentage of mid point (CP)*	*Percentile rank (P.R.)*
18	4	76	74·0	97·3	97
17	4	72	70·0	92·1	92
16	5	68	65·5	85·5	86
15	12	63	57·0	75·0	75
14	7	51	47·5	62·5	63
13	10	44	39·0	51·3	51
12	8	34	30·0	39·4	39
11	11	26	20·5	26·9	27
10	5	15	12·5	16·4	16
9	6	10	7·0	9·2	9
8	2	4	3·0	3·9	4
7	1	2	1·5	1·9	2
6	1	1	0·5	0·6	1

original raw marks to a scale which has more or less equal units. Thus the conversion of raw marks into Z-scores or T-scores will give us a solution for this problem. The Z-scores or T-scores provide us with more nearly comparable values than do raw-scores. The raw scores from each test yield numbers that have no necessary comparability with numbers from another test. Many time it is necessary to have some standard meaning, and this is possible if we convert the raw scores into Z-scores or T-scores.

How to Calculate Z-scores & T-scores : Let (in every subject) the mean and standard deviation be known first. These then can be converted into Z-scores' (with Mean 0 and S.D. = 1) or 'T-scores' (with Mean = 50 and S.D. = 10). The merit list for the admissions can be based according to the calculated values of Z-scores and T-scores.
This again can be done for

(a) aggregate marks i.e. sum of marks in all subjects
(b) Weighted aggregate
(c) individual subjects.

An illustrative example to find out the Z-scores and T-scores is given here to make it very clear. Suppose there are two subjects namely mathematics and English with the following data available about the test results.

Maths : Mean = 42, S.D. = 12
English : Mean = 34, S.D. = 8

Let students A, B and C obtain raw marks of 66, 54 and 30 in Mathematics and 50, 42 and 26 in English. Now their Z-scores will be:

$$(Z = \frac{\text{raw score} - \text{Mean}}{\text{S.D.}})$$

Student	*Maths*		*English*
A	raw mark = 66	A	raw mark 50
Z_A	$= \frac{66-42}{12} = 2\cdot00$	Z_A	$= \frac{50-34}{8} = 2\cdot00$
B	raw mark = 54	B	raw mark = 42
Z_B	$= \frac{54-42}{12} = 1\cdot00$	Z_B	$= \frac{42-34}{8} = 1\cdot00$
C	raw mark = 30	C	raw mark = 26
Z_C	$= \frac{30-42}{12} = -1\cdot00$	Z_C	$= \frac{26-34}{8} = -1\cdot00$

Z-Scores thus provide a rational basis for comparison between different Boards marks. Similarly their T-Scores can also be calculated

$$\left(\text{T-Scores} = \frac{\text{raw score}-\text{Mean}}{\text{S.D.}} \times 10 + 50\right)$$

Student	*Maths*		*English*
A :	raw mark = 66	A :	raw mark = 50
	$T = \frac{66-42}{12} \times 10 + 50 = 70$		$T = \frac{50-34}{8} \times 10 + 50 = 70$
B :	raw mark = 54	B :	raw mark = 42
	$T = \frac{54-42}{12} \times 10 + 50 = 60$		$T = \frac{42-34}{8} \times 10 + 50 = 60$
C :	raw mark = 30	C :	raw mark = 26
	$T = \frac{30-42}{12} \times 10 + 50 = 40$		$T = \frac{30-42}{8} \times 10 + 50 = 40$

As illustrated above the Z-scores or the T-scores for all the subjects in the Board examinations can be separately calculated and the same can be further used while preparing the merit list for the admissions to degree and other professional courses. This method is more appropriate when different sets of marks are to be added or to be compared to a common standard where such standard is lacking. More precisely it can be used when

(a) a student's mark in one subject is added to his marks in other subjects to arrive at an aggregate.
(b) the answer-sheets of students are marked by different examiners.
(c) marks derived from internal assessment are combined with marks on University/Board examinations.

Apart from the above methods there is one more method to find the solution to the problem. The method is more or less similar to the second method with a slight difference i.e. instead of calculating the Z-score and T-score values for a year, it is more appropriate to calculate them for the preceding three years to get more reliable and valid results.

It is of course true that we are extremely limited in making direct comparisons in terms of raw scores (obtained by the students in the various subjects in the various Boards) for the reason that raw scores are subject to different errors. We need a common scale before such comparisons can be made. A student who earns 90 marks in one Board may or may not be academically equal to a student of another Board with the same marks (90).

There may be a lot of variations because of their different methods of evaluation, classification and processing of results. This anomaly can be rectified if we convert the raw scores into the Z-scores. Though the Z-scores can be calculated for the marks of a single year, it is preferable to calculate them for the preceding three years to get more reliable and valid scale, an illustration of which is given below:

Suppose there are two Boards namely X and Y—with various subjects like S_1, S_2, S_3......................S_n. Let us take subject S_1 of both the Boards and work out the mean value and standard deviation for the preceding three years. With the help of the mean value and standard deviation find out the Z-scores for the individual raw scores and finally calculate the average Z-scores values. A comparison between the marks of the two Boards then finally can be made on the basis of the Z-scores. This can be done either for aggregate marks (i.e. sum of marks in all subjects) or for individual subjects. Table 1 gives a clear picture for the same.

Table 1

BOARD X

Let subjects be S_1, S_2, S_3..............................S_n
Let us take S_1

1980		1979		1978		*Average*	
Suppose	$\bar{x}=46$ *sd*= 8	*Suppose*	$\bar{x}=52$ *sd*=9	*Suppose*	$\bar{x}=48$ *sd*=8		
raw scores	*Z—scores*	*raw scores*	*Z—scores*	*raw scores*	*Z—scores*	*raw scores*	*Z—scores*
90 =	+ 5·500	90 =	+ 4·222	90 =	+ 5·250	90 =	+4·990
80 =	+ 4·250	80 =	+ 3·111	80 =	+ 4·000	80 =	+3·786
70 =	+ 3·000	70 =	+ 2·000	70 =	+ 2·750	70 =	+2·583
60 =	+ 1·750	60 =	+ 0·900	60 =	+ 1·500	60 =	+1·383
50 =	+ 0·500	50 =	— 0·222	50 =	+ 0·250	50 =	+0·176
40	— 0·750	40 =	— 1·333	40 =	— 1·000	40 =	—1·026
30 =	— 2·000	30 =	— 2·444	30 =	— 2·250	30 =	—2·230
20 =	— 3·25	20 =	— 3·555	20 =	— 3·500	20 =	—3·433

BOARD X

Let subjects be S_1, S_2, S_3............................S_n
Let us take S_1

1980		1979		1978		*Average*	
Suppose	$\bar{x}=56$ $sd=9$	*Suppose*	$\bar{x}=58$ $sd=8$	*Suppose*	$\bar{x}=60$ $sd=10$		
raw scores	*Z— scores*	*raw scores*	*Z— scores*	*raw scores*	*Z— scores*	*raw scores*	*Z— scores*
90 =	+ 3·777	90 =	+ 4·000	90 =	+ 3·000	90 =	+3·592
80 =	+ 2·666	80 =	+ 2·750	80 =	+ 2·000	80 =	±2·470
70 =	+ 1·555	70 =	+ 1·500	70 =	+ 1·000	70 =	±1·351
60 =	+ 0·444	60 =	+ 0·250	60 =	+ 0·000	60 =	+0·231
50 =	— 0·666	50 =	— 1·000	50 =	— 1·000	50 =	—0·888
40 =	— 1·777	40 =	— 2·250	40 =	— 2·000	40 =	—2·009
30 =	— 2·888	30 =	— 3·500	30 =	— 3·000	30 =	—3·129
20 =	— 4·000	20 =	— 4·750	20 =	— 4·000	20 =	—4·250

It is clear from Table 1 that there is a student in Board X who secured 90 marks and there is a student in Board Y who has also secured 90 marks. If we look at their Z-score values, the assumption that first rank student of one Board is equivalent to the first rank student of another Board, gets disapproved with the results shown in table No. 1, since the Z-score value for the same raw scores in Board X is +4·990 and in Board Y is +3·592. The existing difference between the Z-scores of Board X and Y leads us to conclude that Board X is strict in comparison to Board Y, since the average Z-score value for a raw score of 90 (i.e. +3·592) in Board Y is approximately equal to the Z-score value for a raw score of 80 (i.e. +3·786) in Board X. It means that a raw score of 80 in Board X is approximately. equal to a raw score of 90 in Board Y. Also the average Z-score value for a raw mark of 70 (i.e. +2·583) in Board X seems to be approximately equal to a raw mark of 80 (i.e. +2·470) in Board Y. It therefore confirms that Board X is strict and Board Y is lenient.

Similarly the raw marks of the different Boards can be compared on the basis of the Z-scores and the same can be used while preparing the merit list for the admission to degree and other professional courses.

V. Natarajan and
Ved Prakash

AN ALTERNATIVE APPROACH OF MEASURING STUDENTS' PERFORMANCE FOR DIFFERENT RECRUITMENTS

At present, percentage of marks obtained in the qualifying examinations is the only index in vogue for assessing students performance. This index is used for selecting students seperately from each category of population as notified by the Government. But so far this categorisation is also based on the caste alone whereas the inequalities present in the socio-economic factors within each category is not taken into account. Perhaps, this is the reason that no selection procedure so far could claim to have possessed popularity among all sections of the population. The recent outburst, in the form of agitation accompanied by violence in one part of the country is an indication of this obscure truth. As the flow of student to different courses (both professional and non-professional) grows with growing momentum year after year, the task of selecting students from a cross section of population is becoming more and more difficult. Particularly, in professional courses where the ratio of seats to the number of deserving students becomes extremely small, the rigorous selection procedure has to invite more dissatisfaction and grievances from the public. The present mode of selection on the basis of marks obtained in examinations already passed, also cannot be termed rational and scientific. Since the marks may differ largely because of the non-uniformity of institutions where they study, families where they live and localities where they move. Therefore before assessing a student's ability on the basis of marks obtained the effects possibly made by the these factors has to be properly weighted.

Effect of Institution, Families and Surroundings

Educational institutions in our country vary very much. The inequality of the institutions is so prevalent in so many important ways that most of the parents become sceptical of their childrens' future. Without ambiguity, parents will appreciate an institute which is rich in diverse areas selected for the development of students' career. In this respect they even prefer changing of their places of residence to a place where such facilities are available. Variations from school to school lie in the matter of policies and resources like average teachers experience, salary degrees and virbal ability, size of the class, student-teacher ratio, number of books available in school library etc. Obviously the variation in these factors has a profound effect on the performance of the students.

Similarly, the family and locality together with the school measures also play a dominant role in shaping the achievements of the students.

Present Study

The objective of the present study is to develope an index for measuring students' ability on the basis of their performances in all cognitive areas with due consideration to the variations present among the institutes, families and localities of different students. The idea first came into light in the course of screening the applications for admission into first year degree course in the Assam Agricultural University. In the process of screening it was observed that bulk of the students possessing high percentage of marks belong to urban and semi-urban areas and they studied in the institutes which are capable of providing the minimum required facilities and their parents also possess certain education level. On the other hand students from rural and remote areas comparatively possess lower percentage of marks and the institutions where they studied, the families and localities where they stay can hardly offer the facilities comparable to those enjoyed by their counterparts in the urban and semi-urban areas. In such situations, considering only the percentage of marks as index of their ability for certain purpose, it was observed that the probability that a student from those backward areas will be picked up is very low. And this could never be improved if we fail to appreciate that for eliminating the effects due to the heterogeneity factors influencing the students learning, certain type of adjustment has to be made in the marks obtained by the students. Otherwise poverty, being the root cause of their failure, will engender frustration, fear and anger among them and most reasonably they will consider it a systematic deprivation by an urban biased policy. Realising this some people advocate the need of reservation for this section of population in the line of reservation for schedule castes and scheduled tribes. But reservation, as it stands now is becoming a matter of dispute among the different sections and definitely will find no favour from the people in general. Hence a new device to tackle this burning problems has to be evolved and implemented for general satisfaction. The present study is also an attempt in that direction. In the next section, the procedure of constructing a new assessment index will be discussed.

Assesment Index

Method of Construction : Let Mi be the marks obtained by a student in the i-th examination (i=1, 2,...) and Ai be the adjustment factor attributed to Mi. Ai will depend on the joint variation of X_i ($i=1, 2,\ldots$) which measure the factors like institution, family, locality etc.

Let C_i ($i=1, 2,\ldots$) be the measurement of achievement in the i-th extracurricular activity then, the score S scored by a student depending on this performance in academic and extracurricular activities can be defined as a function of M_i, A_i and C_i; i.e.

$$S=f\,(M_i,A_i,C_i)$$

Where the form of the function (f), is not known. But it may be conjectured that any change ds in S will be linearly related to the changes dM_i, dA_i and dC_i in M_i, A_i and C_i respectively.

Following the relation given above, it may be decided that the total academic score obtained by a student is $= \sum_{i=1}^{n} (M_i+A_i)$ where n is the number of examinations the student has come through. Now $\bar{c}= \frac{1}{k}\sum_{i=1}^{k} \bar{c}_i$ is the mean of measures in the extracuricular activities. If C_i be expressed in the percentage form such that $0\leqslant C_i\leqslant 1$, where 0 indicates complete failure in the field and 1 indicate 100 per cent success, then obviously $0 \leqslant \bar{c} \leqslant 1$ also.

The level of achievement on the academic sides and the level of achievement in the extra curricular activities are interdependent,. This means if a student desires to maintain a high level of achievement in extra curricular activities e.g. sports, he is to spare more of his time, energy, talent etc. As a result his level of achievement on the academic side is most likely to be lowered. Only in exceptional cases it may happen otherwise. Therefore, the level of achievement in the extra curricular activities can be approximately equated to the amount of loss in the academic sides. Again this loss can be expressed as a certain portion (p) of the academic score which the student has actually obtained. Hence the portion (p) will depend on $\bar{c}$ and can be proposed in the following way (i) If $\bar{c}$ is so small that $\bar{c}^2$ is negligible then the amount is given by $\bar{c}\sum_{1}^{n} (M_i+A_i)$ and then the total score given to a student is $\sum_{1}^{n} (M_i + A_i) + \bar{c} \times \sum_{1}^{n} (M_i+A_i)$ (ii) If $\bar{c}$ is such that $\bar{c}^3$ is negligible then the amount is given by $(\bar{c}+\bar{c}^2/2!)\sum_{1}^{n} (M_i+A_i)$ and the total score is $\sum_{1}^{n} (M_i + A_i) + (\bar{c}+\bar{c}^2/2!)\sum_{1}^{n} (M_i+A_i)$. Similarly we can proceed to extend the process depending on the value of $\bar{c}$ and a general expression for the total score (S) given to a student depending on his academic and extracuricular achievement can be written as

$$\begin{aligned} S' &= \sum_{1}^{n} (M_i+A_i)+(\bar{c}+\bar{c}^2/2!+\bar{c}^3/3!\ldots\ldots\ldots\ldots)\sum_{1}^{n} (M_i+A_i) \\ &= (1+\bar{c}+\bar{c}^2/2!+c^3/3!+\ldots\ldots\ldots\ldots)\sum_{1}^{n} (M_i+A_i). \\ &= \sum_{1}^{n} (M_i+A_i)\, e^{\bar{c}} \ldots\ldots\ldots\ldots\ldots \qquad (2.1.1) \end{aligned}$$

Another factor the effect of which should not be ignored in calculating score, is the time taken by a student for completing the required academic stage. Because, other things being equal, the score of a student taking more than the prescribed time could not be equal to the score obtained by a student who could do so in the prescribed time. Therefore, the academic score $\sum (M_i+A_i)e^{\bar{c}}$ would have to be weighted by the time—lag (T) of completion. The weighing factor T is defined as $T=(1-\frac{et}{pt})$ where Pt is the total time prescribed and et is the extra time taken for completing the course. Hence, the score (S) which can be used as an index for assessing a student ability depending on his achievement in academic and other cognitive areas is given by $S=T\sum_{1}^{n}(Mi+Ai)\,e^{\bar{c}}$

Determination of the Adjusting Factor Ai : As discussed earlier the adjusting factor Ai will depend on the measure Xi which is an indicator of degree of suitability of the factors like institutions, families, localities, etc. for the learning process. Therefore, it can be assumed that the value of Ai would vary indirectly to Xj (j=1.2. .), since the marks obtained by a student has to be adjusted upward if the institution, family and locality are less suitable for the learning process.

Hence, $Ai \propto \frac{1}{x_j}$ (j=1,2,............................)

i.e. $Ai \propto \frac{1}{x_1}$, $Ai \propto \frac{1}{x_2}$, $Ai \propto \frac{1}{x_3}$, and so on.

combining all it can be derived that

$$Ai = \left(\frac{k_1}{x_1x_2x_3\ldots x_k}\right)^{\frac{1}{k}}$$

Where Ki is unknown constant. For convenience of calculation it is assumed that Ki=K, the number of factors associated for determining Ai.

Measurement of Xi's and Ci's : For the sake of simplicity in calculation and handling, only three factors Viz, institution, family, and locality which have a profound impact on learning process would be considered here. The ways the variations come from these factors have been discussed earlier. The measures Xi (i=1,2,3) can be expressed in the form of percentage and the procedure for measuring them is as follows.

The impact of the variations present in all the input factors of an institutes is reflected to a great extent in the percentage of succesful students of that institute in different years. For calculating Ai, X_1, can be approximately measured in terms of the average per cent of students passed from that institute in the i—th examination of recognition in the year in which the index is sought. To avoid any controversy, the responsibility of calculating this value should be entrusted to the authorities that conducts the examination and this should be shown in the marksheet against the institute of each student each year.

The family measure X2 is to be made in view of the family background factors which are discussed earlier. As it is not feasible to evaluate the merits and demerits of all the factors, only two factors viz parents' income and occupation which in fact directly influence the over all condition of the family will be considered. Therefore the measurement X_2 can be made interms of the percent of facilities parents are capable of providing to their children, by categorising parents according to their occupation and income in the following way.

Occupation	*Income (Rs.)*	*Value of X_2*
Business/cultivation/Service	less than 300	·10
Cultivation......Service/Business	above 300 to 500	·15
Cultivation	above 500 to 700	·20
Service/Business	above 500 to 700	·25
Cultivation	above 700 to 900	·30
Service/Business	above 700 to 900	·35
Cultivation	" 900 to 1,100	·40
Service/Business	" 900 to 1,100	·45
Cultivation	" 1,100 to 1,300	·50
Service/Business	" 1,100 to 1,300	·55
Cultivation/Business/Service	" 1,300 to 1,500	·60
"	" 1,500 to 1,800	·65
"	" 1,800 to 2,100	·70
"	" 2,100 to 2,500	·75
"	" 2,500 to 3,000	·80

Cultivation/Business/Service	" 3,000 to 3,500	·85
"	" 3,500 to 4,000	·95
"	" 4,000	1·00

Information on parents occupation and income can be obtained by making queries to each student. The queries should be property designed and includes points regarding (1) parents' occupation (2) If in the service the total period of service (3) name of the employer (4) position enjoyed in the office (5) total pay with all allowances (6) cultivable land owned (7) size of the family (8) nature of business if, occupation is business (9) location of the business (10) amount of monthly transaction (11) crops grown in the owned land etc. Extra care should be taken to see that the declaration made against each of the above points are correct to the maximum extent.

To distinguish the localities of different students the measure X_3 can be made in terms of the per cent of literate persons of the corresponding localities. Locality should be measured in terms of the minimum possible area demarkated for administrative purposes i.e. Gaon panchyat, municipality board etc. Thus X_3 is the per cent of literate persons of the locality which the student belongs to. The reason for considering literacy to measure X_3 is evidently from the fact that level of progress and availability of facilities of any locality is directly related to the level of literacy. If it is not possible to collect information from such smaller units then information on the district level for both urban and rural separately would perhaps work fairly well.

Determination of Ci : As defined earlier, Ci is the measure of the level of achievement of a student in the i—th congnitive area other than the accadmine one. For operational converiences, these areas can be divided into three sub areas as follows : (1) all sports and games, (2) literary activities e.g. writting easay, poetry, short story, novel, drama etc.; and (3) Artistic pursuits e.g. music, dance, acting, painting etc. The scheme for giving values to Ci depending on the level of achievement in i—th area is proposed as follows:

Level of achievement own		*Value of Ci*
represented the institution of study	=	·25
represented the district	=	·50
represented the state	=	·75
represented a zone (more than one state)	=	·80
represented the nation	=	1·00

Following examples have been cited as illustrations of the above procedure.

Example I. A student has secured 55% marks in the High School Leaving Certificate examination. He belongs to a rural area which has a literacy value ·25 His parents monthly income is Rs. 500 and occupation is cultivation. From the records of the previous five years it is found that an average of 25% students came out successful from the institute where he studied. He has no records of eminence in any of extra-curricular activity. Calculate the index of ability of the student.

For this student $T = 1$

$M1 = 55$

$X_1 = {\cdot}25$

$X_2 = {\cdot}25$

$X_3 = {\cdot}25$

$C_i = 0 \quad (i=1,2,3)$

$\bar{c} = 0$

$$A_1 = \left(\frac{3\times10^6}{25\times25\times25}\right)^{1/3} = \frac{100}{25}\times3^{1/3} = 4\times1.442 = 4{\cdot}768 = 4{\cdot}77$$

$$\text{Hence } S = (55+4\cdot 77)e^{\circ}$$
$$= 59\cdot 77$$

Example II. For a student, the following values are recorded

$M1 = 60\%$, where $x_1 = \cdot 10, x_2 = .35, x_3 = 30$
$M2 = 65\%$, where $x_1 = .30$, $x_2 \cdot 35, x_3 = .35$
$C_1 = \cdot 25$, $c_2 = 0, c_3 = 0$

Besides the students have taken 2 years more for completing the two courses.

$$\bar{c} = \frac{\cdot 25+0+0}{3} = \cdot 083 \text{ (approx)}$$

$$T = (1 - \frac{2}{10} = \cdot 8$$

$$A_1 = \frac{1\cdot 44 \times 100}{(10500)^{1/3}}$$
$$= 1\cdot 44 \times 4\cdot 57$$
$$= 6\cdot 58$$

$$A2 = 1\cdot 44 \times \frac{100}{(36750)^{1/3}}$$
$$= 1\cdot 44 \times 3\cdot 01 = 4\cdot 332$$

$$S = \cdot 8\,(60+65+6\cdot 58+4\cdot 33)e^{\cdot 083}$$
$$= \cdot 8 \times 135\cdot 91 \times 1\cdot 08 = 117\cdot 43$$

References

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A.C. Bora

PRIVATE COSTS IN HIGHER EDUCATION

What is the burden of household in obtaining higher education? This aspect could be known through a systematic study of private cost. But in India, private costs have hardly been studied. Private costs are of two types. Direct (recorded) private costs viz costs of books, stationery, transport, additional expenses of outsiding living in hostel or private room in addition to fee-payments to institutions are of the first type costs. Opportunity costs of student's time or foregone earnings (notional) are second type of costs. In the present paper, we propose to examine the direct private costs of the first type. These private costs are determined and analysed on the basis of a field study of the Panjab University.

Sources of data and methodology : Two tools have been used in order to collect data on private costs:

(i) Students' questionnaire was developed by the author. This schedule provides information about costs of books, stationery, transport and hostel expenses besides socio-economic status of the students.

(ii) For fee-charges, admission-cum-prospectus of colleges have been used as source-material as well as University calendar have been consulted in order to know the prescribed rates of fees and funds charged from students for each course. These prospectus were collected for the years 1974-75, 1976-77 and 1977-78.

Sampling : Students schedule was got filled up from students of teaching departments of the University. The sample covered 2 per cent of the total strength of 5,063. The sampling procedure is as follows:–

There were 8 departments which were beyond administrative reach hence the sample was distributed in only 28 departments. It was pre-determined that the sample-size of each department should be approximately the same as overall 2 per cent, varying between the lowest figure and the highest in such a manner that smaller the population size of a department, the larger the allocation ratio for determining the sample-size within particular department. The questionnaire was canvassed for as many sample units as determined on the allocation criteria in the manner as follows:

(i) A student was picked randomly without any bias or prior knowledge or any pre-determined probability scheme. He/She was requested to cooperate in furnishing the required information. If the response was positive, the questionnaire was filled up. In case of negative response, another student was picked up. In similar manner and with the same approach, the responses of the required sample size were obtained. Total responses so obtained from 28 teaching departments were 103.

(ii) Similarly, for affiliated colleges, 279 schedules were obtained from all cross-group of student population by sex, management, age, course and location both from day-scholars and hostelers. Further, it was also ensured that respondents belong to both types of education—general and professional. The responses were collected from students during the session of 1977-78 which furnished expenses on books, stationery of the previous year i.e. 1976-77. The sample size of 279 for affiliated colleges is small but again the time, resources and difficulty of obtaining schedules due to physical accessibility to a college were factors limiting the sample-size.

Private Cost in the Teaching Departments

Table 1 indicates the level of private costs for various courses in the teaching departments. Column 6 of the table indicated private costs with respect to day-scholars and column 11 the level of these costs for hostelers. Costs of books, stationery, transport, mess-expenses and pocket expenses were estimated from the declarations of respondents and were 'averages' for each course. Hostel expenses in the table are considered the average of 64 respondents who reported that they were hostelers. Hostel-fee, contingencies of the hostel were the same for all residents irrespective of courses. The hostel fees included seat-rent, other contingencies like payment of hostel servants, electricity charges for fan and light etc. The hostel expenses for mess and pocket expenses have been considered for ten months since hostelers remained outside the hostel for two months in summer vacation. Hostel seat-rent and contingencies are considered for full twelve months because university charges these rates for full twelve months. Similarly in working out transport cost 360 trips (to and from) were considered assuming that total working days of University/department/college were 180 in full session. Transport cost was a function of distance, mode of conveyance used so transport cost also varied from a lower limit of Rs. 30 in case of those who use cycle as a mode of transport to the upper limit even exceeding Rs. 500/-. But here, the average transport cost is indicated.

The level of hostel expenses per hostelers was Rs. 2,918 whereas other costs varied between Rs. 715 and Rs. 1,151. There is no such confirmed tendency that the private costs

Table 1

PRIVATE COSTS: TEACHING DEPARTMENTS (PER STUDENT PER ANNUM)

(In Rupees)

		Day-Scholars					Hostelers			
	Fees	*Books*	*Sta-tionery*	*Trans-port*	*Total col. 2 to 5*	*Fees*	*Mess*	*Pocket expendi-ture*	*Total hostel expendi-ture col. 7 to 9*	*Total col. 6 and 10*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) B.A. Economics Hons. School	348	280	80	120	828	323	1452	1143	2918	3746
(2) B.Sc. Science Hons. School	429	224	170	68	891	323	1452	1143	2918	3809
(3) M.A.	413	358	122	258	1151	323	1452	1143	2918	4069
(4) M.A. (Languages)	413	494	125	93	1125	323	1452	1143	2918	4043
(5) M.Sc.	489	292	202	93	1076	323	1452	1143	2918	3994
(6) B.Sc. Engineering & Technology	379	175	131	30	715	323	1452	1143	2918	3633
(7) LL.B.	383	181	45	240	849	323	1452	1143	2918	3767

increase with the level of course. Private costs were personal costs hence the level of these costs was characterised by the circumstances and discretion of the individual respondents. For instance, the range both for mess and pocket expenses varied as is evident in the Tables 2 and 3 given below:

Table 2

MESS EXPENSES IN TEACHING DEPARTMENTS

Range of Mess Expenses	*Number of respondents*	*Per cent of the total*
(1)	(2)	(3)
Below Rs. 999	3	4·7
Rs. 1000–1499	27	42·2
Rs. 1500–1999	20	31·3
Rs. 2000–2499	14	21·8
Total	64	100·0

It is seen from the Table 2 that majority of the hostel-respondents (42·2 per cent) reported that they were spending in the range of Rs. 1000–1499 on mess expenses though percentage distribution of respondents varied for each range of mess expenses. Similar is the case for pocket expenses as given in Table 3.

Table 3

POCKET EXPENSES IN TEACHING DEPARTMENTS

Range of Pocket Expenses	*Number of respondents*	*Per cent of the total*
(1)	(2)	(3)
Below Rs. 999	30	46·9
Rs. 1000–1499	17	26·6
Rs. 1500–1999	11	17·1
Rs. 2000–2499	6	9·4
Total	64	100·0

Students living in hostels reported that they were incurring pocket expenditure on maintenance, toileteries, entertainment and refreshment. Majority of the hostelers (46·9 per cent) in teaching departments reported that they were spending below Rs. 999. But as it is evident that pocket expenses were tapering of as the range increased.

Private Costs in the Affiliated Colleges

Government Colleges

The level of private costs in Government-managed colleges have been indicated for fourteen courses both general education and professional education in Table 4. Column 6 of the table indicates the level of private costs for day-scholars against each course and column 11 for hostelers. The level of hostel expenses was on the average Rs. 2,212 and the level of other private costs varied between Rs. 512 and Rs. 1,116. It is evident from the Table that the level of other private costs varied from course to course.

Table 4

PRIVATE COSTS—GOVERNMENT COLLEGES (PER STUDENT PER ANNUM)

(In Rupees)

	Day-Scholars					*Hostelers*				
Courses	*Fees*	*Books*	*Sta-tionery*	*Transport*	*Total col. 2 to 5*	*Fees*	*Mess*	*Pocket expenses*	*Total*	*Col. 6+Col. 10*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Prep-Arts	290	83	51	106	530	352	1040	820	2212	2742
(2) Prep-Science	336	170	65	85	656	352	1040	820	2212	2868
(3) Preprofessional	327	170	65	85	647	352	1040	820	2212	2859
(4) TDC-Arts	319	92	46	55	512	352	1040	820	2212	2724
(5) TDC-Science	365	200	150	75	790	352	1040	820	2212	3005
(6) TDC-Commerce	370	200	100	75	745	352	1040	820	2212	2957
(7) TDC-Arts (Hons.)	364	200	150	75	789	352	1040	820	2212	3001
(8) TDC-Science (Hons.)	400	200	150	75	825	352	1040	820	2212	3037
(9) M.A.	376	321	135	146	978	352	1040	820	2212	3190
(10) Home-Science (Ist Degree)	334	120	67	85	606	352	1040	820	2212	3118
(11) Home Science (Master Degree)	456	63	70	270	859	352	1040	820	2212	3371
(12) Engineering (Ist Degree)	392	163	98	59	712	352	1040	820	2212	3660
(13) Architecture (First Degree)	483	67	247	319	1116	352	1040	820	2212	3878
(14) B.Ed.	334	128	67	160	689	352	1040	820	2212	2541

Table 5

PRIVATE COSTS: PRIVATE COLLEGES (PER STUDENT PER ANNUM)

(In Rupees)

	Day-Scholars					Hostelers				
Courses/Level	*Fees*	*Books*	*Sta-tionery*	*Transport*	*Total*	*Fees*	*Mess*	*Pocket*	*Total*	*Col. 6+Col. 10*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Prep-Arts	525	150	63	171	909	597	1400	510	2507	3416
(2) Prep-Science	603	150	63	171	987	597	1400	510	2507	3494
(3) Pre-professional	670	150	63	171	1054	597	1400	510	2507	3561
(4) TDC-Arts	604	153	74	219	1050	597	1400	510	2507	3557
(5) TDC-Science	668	190	175	132	1165	597	1400	510	2507	3672
(6) TDC-Commerce	618	400	150	132	1300	597	1400	510	2507	3807
(7) TDC-Arts (Hons.)	618	190	175	132	1115	597	1400	510	2507	3622
(8) TDC-Science (Hons.)	729	190	175	132	1226	597	1400	510	2507	3733

Table 6

LEVEL AND VARIATION OF FEES IN AFFILIATED COLLEGES LOWER LIMIT

(In Rupees)

Courses	Private Colleges			Government Colleges			Variation		
	General Fees	Hostel Fees	Total Fees	General Fees	Hostel Fees	Total Fees	General Fees	Hostel Fees	Total Fees
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Prep-Arts	469	497	966	248	294	542	221	203	424
2. Prep-Science	565	497	1062	287	294	581	278	203	481
3. Pre-professional	633	497	1130	300	294	594	333	203	536
4. TDC (Arts)	456	497	953	284	294	578	172	203	375
5. TDC (Science)	516	497	1013	346	294	640	170	203	373
6. TDC (Commerce)	456	497	953	358	294	652	98	203	301
7. TDC Arts (Hons.)	456	497	953	339	294	633	117	203	320
8. TDC Science (Hons.)	456	497	953	376	294	670	80	203	283
UPPER LIMIT									
1. Prep-Arts	581	697	1278	334	411	745	247	286	533
2. Prep-Science	641	697	1338	375	411	786	266	286	552
3. Pre-professional	675	697	1338	375	411	786	266	286	607
4. TDC (Arts)	649	697	1346	342	411	753	307	286	593
5. TDC (Science)	690	697	1387	392	411	803	298	286	584
6. TDC (Commerce)	655	697	1352	406	411	817	249	286	535
7. TDC Arts (Hons.)	681	697	1378	397	411	808	284	286	570
8. TDC Science (Hons.)	810	697	1507	426	411	837	384	286	670

Note: (1) *General Fees exclude University Examination Fees.*
(2) *Securities have been excluded since these were refundable.*

Private Costs in Private Colleges

Table 5 presents the level of private costs of eight courses which were computed separately for day-scholars and hostelers belonging to private colleges. It is seen that the level of hostel expenses was Rs. 2,507 and of other private costs varied between Rs. 909 and Rs. 1,300. It was clear that the level of hostel expenses and other private costs in private colleges were higher than in the Government colleges. Fee-rates and other charges are also higher in private colleges compared to Government colleges.

A further investigation about the fee rates for general education in both Government and private colleges revealed that these rates were varying from institution to institution. This is evident from Table 6.

A few observations could be drawn from the table. Fee rates and annual charges both for day-scholars and hostelers varied between Government and private colleges. So much so that these were different under each management and even college. This fact is illustrated from the lower limit and the upper limit of rates shown in the table. The lower-limit denoted the minimum rates and the upper limit the maximum. Private colleges charged more compared to Government colleges. The absolute difference has been shown in col. 8, 9 and 10.

At the lower limit, the maximum variation was found in pre-professional courses which was Rs. 333 and at the upper limit, it was in B.Sc. (Honours) courses with absolute difference of Rs. 384. Similarly, hostelers in private colleges had to give Rs. 203 more compared to hostelers of Government colleges at the lower limit and Rs. 286 at the upper-limit. A close scrutiny of the prospectus-cum-admission brochure revealed that each college charged different rates for admission fee, college magazine and publication fees, maintenance and service charges, book-replacement fund, identity card fee, club and society funds, scooter and cycle parking fee. Some colleges were also charging for stationery and correspondence to cover cost of administrative correspondence. Similarly, colleges were also charging for college celebrations like Foundation Day, Flag Day etc.

In case of hostelers, charges on utensils, hostel securities, conservancy charges, medical aid fees, hostel-welfare fund, seasonal charges for fans etc. were varying. All these charges were discretionary and did not conform to the Univesity prescribed rates. Since tuition fee rates were controlled by the University, annual charges were collected at enhanced rates. Additional resources were mobilised under new nomenclature. This tendency was evident more in the established colleges. Annual charges of these colleges were higher compared to newly established colleges.

Conclusion

Private costs mean: Costs of books, stationery, transport cost, living expenses in hostel were examined by type and level of courses both for teaching departments and affiliated colleges separately. Costs of books, stationery, transport costs and costs of living in hostel were estimated averages from the field study reported by 382 respondents. It was known from these estimates that there was no such confirmed tendency that these costs were increasing corresponding to the level and type of courses. It depended upon largely on the discretion and circumstances of respondents. It was also noticed that fee rates and annual charges both for day-scholars and hostelers varied between Government colleges and private colleges. These rates varied from institution to institution too. Much of the difference was in annual charges. Private colleges charged higher fee rates and annual charges. Annual charges in private colleges were collected at enhanced rates. Additional resources were being mobilised under new nomenclature. This tendency was much in evidence in the established colleges.

V.P. Garg

THE STUDENTS BODIES IN THE UNIVERSITIES

The student activities, to be compatible with the unique objectives of individual institutions of higher education and relevant to the interests and needs of students and student groups, must serve a variety of purposes. Few institutions can choose to ignore or to disclaim interest in the many facets of student group life. Although some institutions continue to deal with student activities as if they existed only when the student activity causes 'trouble', the growing practice among the universities is to foster and encourage student activities to the end that they become educational resources which complement the curriculum in fostering learning and maturity.

The Sample and Method

The sample includes twenty-three universities from eleven countries. They are four American (Florida State, Harvard, Washburn University of Topeka and Indiana), four English (Oxford, Cambridge, Leeds, and Essex), four Australian (Sydney, Melbourne, Australian National University, and James Cook), four Indian (Calcutta, Banaras Hindu University, Annamalai, and Jodhpur). The other universities are Paris (France), Tokyo (Japan), Tribhuwan (Nepal), Srilanka (Ceylon), Kabul (Afghanistan), Pretoria (South Africa), Ottawa (Canada). The survey method was used. The following tools and techniques were used—(a) A Questionnaire, (b) An Administrative-practices-rating-scale, (c) An Opinionnaire, (d) document analysis—this includes the copies of the Acts, Statutes, Calanders, Handbooks and other relevant literature.

Main Findings

Students Bodies in Different Universities

English Universities : In oxford university there is Union Society, which was founded in 1826. It is primarily a debating society and debates on a variety of subjects are organised. The membership is open to all members of the university, both men and women. It is being a forum for debates and it provides the following club facilities—lending library, restaurant, bar, billiards, newspapers, writing room, television room and night club.

Within colleges there are Students' organisations: a Junior Common Room (J.C.R.) which provides extension social and recreational facilities and which is concerned with matters of common interest to under-graduate members of the colleges and a Middle Common Room (M.C.R.) which serves the same function for graduate students. These organisations elect representatives to a Central Student Representation Council, which is concerned with university, as distinct from college matters.

In Cambridge University there is also Union Society. It is open to all members of the university. Its chief activity is debating, but it also contain a library, restaurant and room for society activities. It is semi-official body. In the University of Leeds there is a Union of the students of the university. All students of the university are members of the university Union and have full use of all union facilities which includes four licensed bars; theatre, cafetaria, Coffee lounges, T.V., billiards Common and Committee rooms, travel bureau, stationery, books and record shops etc. The membership is also open to all university staff upon payment of small fee. It publishes weekly Leeds Students. The union besides providing club for students fulfils the function through its meetings and committee. The executive officers are, President, Deputy President for communication, Deputy President for services Secretary, Students' Treasurer, House Secretary, N.U.S. Secretary, Cultural Secretary, general atheletics Secretary, honorary treasurer and other permanent and clerical staff.

In the University of Essex the students Union is an association of all full-time students in the university. It receives its income from an allocation from the composite fee. From this income the union gives grants to the clubs and societies recognised by the union and the Students Sport-federation.

Australian Universities : In the University of Sydney there is a University Union. The membership is compulsory for all students. It is a self-governing body, the control being vested in the hands of a President, who is elected by the members and Board of fourteen Directors, two of whom are appointed by the Senate and twelve are elected by the members. It operates a refreshment service, common rooms and games rooms. It publishes the Union Record weekly during the term. It gives university news, articles and reviews. Other facilities provided are banks, shops, theatre etc.

There is also University Union in Melbourne University. The ordinary members are students of the university, past and present members of teaching staff and other senior staff, graduates of the university, past or present members of the council. There are associate and provisional life members. There is Board of Directors which have full works. It is consisted of (a) the vice-chancellor or some other permanent officer of the university or of an affiliated college of the university appointed by council (b) the students Representative Council President or his nominee, (c) the chairman of union council, (d) Administrator of the Union (e) a senior administrative or academic officer appointed annually by Council to work as Honorary Treasurer, (f) six members elected for a term of two years by union members. It has power to acquire and dispose of property. It can call upon any member of the union for any misconduct. The union council is responsible for administration and development of the students' activities.

In the Australian National University there is the University Union. There are five types of members—ordinary members, life-members, honorary life-members, visiting members and reciprocal members. The constitution of Board is consisted of the Vice-chancellor or his nominee; one person appointed by Council, Bursar, one person appointed by A.N.U. Staff association, one person appointed by A.N.U. Research Students Association, one person appointed by A.N.U. Students Association, one person appointed by the Sport Council of A.N.U., 10 members of the Union elected; two other persons appointed by the Board. The objectives of the Union are (a) to provide a meeting place and social centre for its members, (b) to promote the intellectual and social interests and the general welfare of the members, (c) to secure the cooperation of its members in furthering the interests of the university, (d) to borrow or raise or secure the payment of money in such manner as the union may, think fit and to secure the same or repayment or the performance of any debt, liability, contract guarantee or other engagement incurred or to be entered into by the union in any way.

In James Cook University the Union membership is open to students full-time and part-time, studying at the university, provision is also made for associate members which embraces most other members of the university community. The aim is to provide an opportunity for such other persons to enjoy the facilities provided by the union. The union is responsible for the coordination and promotion of student activity and interest within the university in particular and within the local community in general. The major areas of student activity are academic, cultural, sporting or administrative character. It sponsores a number of sporting clubs and publishes news sheets and other publications. The union council is the government, which is the policy-making body of the union. The council itself consists of the executive, specific portfolio appointments and general representatives, all of whom are elected annually. There is also provision for a general meeting of students which can advise union Council on policy matters.

Indian Universities : In Banaras Hindu University also there is Students' Union; Every student enrolled for and attending a course of study in college, faculty, institute maintained by the university is member of this. All the teachers of the university are its associate members. The activities of the union are (a) to organise debates, discussions, essay competition, lecture study-circle, cultural performances and extra mural activities, (b) to arrange exhibition in fine arts and crafts and to publish magazines and bulletines, (c) to organise social service and social relief work (d) to organise and run cooprative, (e) to send goodwill study mission, (f) to organise peaceful activities to express democratic urges and aspirations of the students, (g) to suggest to the appropriate authorities the measures for improving academic standards regarding admission, examination, content of studies and feeship, students'-aid, emergency relief and standard of sport etc. The office-bearers are President, Vice-president, General Secretary, two joint secretaries, members of the Council of Secretaries, Honorary-treasurer. The Vice-chancellor is the Patron. The Union functions through the Chhatra Samsad which is supreme authority of the Union and is consisted of two houses (1) Chhatra Mahasamiti and (2) Chhatra Parishad.

In Annamalai University there is General Council of Associations and Societies. Its objects are to coordinate the activities and arrange for all functions common to all departmental associations and other societies; The functions are to arrange debates in English and other languages; to promote the social and cultural welfare of the students of the university. The office-bearers are President, who is the Vice-chancellor, the Vice-president is nominated by the Vice-chancellor, Secretary and joint-secretary are elected by the secretaries from among themselves. Treasurer is nominated by the Vice-chancellor, secretaries are from each association and societies, four teachers are nominated by the Vice-chancellor.

Similarly in Calcutta University, the colleges have Students' Union and various extra-academic activities are normally organised by them. There is University Students Union in the University of Jodhpur. It organises social and cultural activities and also invites prominent persons to address the students.

Other Universities : In the University of Ceylon each faculty has Faculty Students Union. It is consisted of President, Vice-president, secretary, assistant secretary, junior-treasurer, the Editor and seven committee members elected from among the general body of students. Each campus of the university has a student Council. It is composed of President, Vice-president, secretary, assistant secretary, junior treasurer, Editors and other members nominated by each faculty students Union. Its functions are (1) to foster cultural, literary and aesthetic awareness and activity among students, (2) to foster an interest and understanding in the arts, life and the social well-being of the citizens of the country, (3) to organise and promote cultural, literary and social inter-activity with other universities and like organisations in Ceylon and abroad, (4) to foster activity conducive to the social and moral well-being of the student community and promote activity conducive to healthy social life, (5) to foster a spirit of corporate life among students, (6) to organise and supervise, subject to the direction and control of the committee of Residence and the committee of welfare and discipline of the campus, student welfare facilities in the university including recreational facilities, spiritual and religious activities and supply of meals and refreshments, (7) to recommend to Campus Board on all matters of living and working conditions of the students, (8) to represent on any body for student welfare activities and assist in maintaining discipline among students, (9) to represent students who are the accused in disciplinary inquiries, (10) to participate actively in the organisation and execution of extension courses and adult education programmes in collaboration with the campus staff and students.

In the Tribhuwan University, there is students Welfare section, which takes care of all such programme as may lead to the physical and mental well-being of the students of the university. Its works is (1) to guide and supervise the establishment of student unions in the different campuses and their activities, (2) to look after the dormitories and cafeterias, (3) to conduct sports and other extra-curricular activities, (4) to recommend award of stipends to the needy and meritorious students and (5) to help students solve their various problems.

In Indiana University the responsibility for student affairs in certain areas, is delegated by the Board of Trustees to the office of the Dean of Students under the direction and control of the proper chief executive officer and subject to the supervision of the President. Extra-curricular life on various regional campuses abounds with opportunities for enriching the academic career. Interest and participation in extra curricular activities are based on the individuals interest and time available. A wide variety of activities is offered to the university students approximately two hundred clubs and organisations present opportunities for participation to the students at one campus alone. There is a student legislative body elected by the students. This body is without final executive authority and its main function is debate and discussion.

In Washburn University the student government operates under the control of the student council, a group of elected students who administer matters which are of primary concern to students. They also serve as a medium for communicating students views among all areas of the university.

Students Union Advisory Board : The memorial union is the community centre of the university which is composed of students, teaching staff, administrative personnel, alumni and guests. The union is an organisation providing cultural educational and recreational activities. The students Union Activities Board promotes, implements and plans these activities. All students are invited to join the various sub-committees of the Board and become actively involved in programme planning. In order to recognise outstanding leadership, scholarship and campus contributions, this university has historically supported three distinct honour societies. These are TAU DELTA Pi, No noso and sagamore. There are five classifications of students organisations on the campus-honorary, professional and departmental, special interest, social and religious. The participation in honour societies is by election and invitation. Normally, the candidates elected rank high in scholarship, leadership and professional spirit.

The details of students bodies of few universties are not available. On the basis of above data the following points emerge out. (1) The students activities or bodies are organised for the development of other faculties or interests. They cater the needs of the students and inculcate among them the spirit of cooperation, leadership, organisation etc; (2) Those universities which are economically sound and have more budget for this item, can provide various types of activities to their students; (3) These activities differ from one university to another.

The Factors Influencing the Students Union

Sofar the working of the students union or bodies in different universities are laid down in theory has been discussed. To know the actual practice regarding the students union in the various universities the rating on Administrative Practice rating-scale were obtained from the teachers of these universities.

The table shows the scores obtained by the universities on the students' union. Information was sought from the university teachers concerning four factors which may determine getting of the seats in the student union or bodies by the students: political backing, an influential students' group is backing them, on merit, on the basis of the amount of money spent by the students and any other factor. The teachers were asked to rate each factor on a five-point-scale. The higher scores indicate better practices.

The first factor is the political backing; In one American, two Australian, a Nepalese and a Canadian universities (scores 5·0 each) this factor has no influence at all in formation of students' union. In two Australian and one Indian universities (scores 4·9 to 4·6) there is deviation some times on the basis of this factor. There is influence of political backing in a few cases in one American, a Japanese and a South African universites (scores 4·5 to 4·0). In one American, two English, two Indian a Ceylonese and an Afghan universities (scores 3·5 to 3·0) the political backing has influence in most cases in matters of students union. In one English university (score 1·0) and one Indian university (score 2·2) the political backing has influence in all cases in getting the seats in student bodies. The practices in these universities seem to be not sound and democratic. On this issue there is no response from the universities of Harvard, Oxford and Paris.

The second factor is the impact of influencial group of students. In University of Canada (score 5·0) in no case the students get the seats in the union on the backing of group of influential students. The practices in this university are most democratic and healthy. In one American university (score 4·6) there is slight deviation some times under

THE STUDENTS UNION OF THE UNIVERSITIES

University	*Political backing*	*Students Group*	*Merit*	*Money*	*Anyother*	*Total*
Indiana	3·5	3·0	3·5	4·5	—	14·5
Washburn	5·0	4·6	1·0	5·0	—	15·6
Harvard	—	—	—	—	—	—
Florida State	4·3	2·6	2·6	4·3	—	13·8
Oxford	—	—	—	1·0	—	1·0
Cambridge	3·5	3·5	2·5	5·0	—	14·5
Leeds	3·0	3·0	1·0	5·0	—	12·0
Essex	1·0	2·0	1·0	5·0	—	9·0
Sydney	5·0	4·0	2·0	5·0	—	16·0
Melbourne	4·7	3·5	3·0	5·0	—	16·2
A.N.U.	4·6	4·2	2·2	5·0	—	16·0
James Cook	5·0	3·1	3·5	5·0	—	16·0
B.H.U.	2·2	2·4	2·5	3·2	—	10·3
Annamalai	3·0	3·0	2·5	4·5	—	13·0
Calcutta	3·0	3·0	—	5·0	—	11·0
Jodhpur	4·6	4·2	2·0	4·6	—	15·4
Ceylon	3·0	3·0	—	—	—	6·0
Tribhuwan	5·0	3·0	2·0	5·0	—	15·0
Kabul	3·0	4·0	2·0	4·0	—	13·0
Tokyo	4·5	2·0	2·5	5·0	—	14·0
Paris	—	—	5·0	—	—	5·0
South Africa	4·0	4·0	3·0	5·0	—	16·0
Ottawa	5·0	5·0	3·0	5·0	—	18·0

the influence of this factor. In two Australian, one Indian, an Afghan and a South African universities (scores 4·5 to 4·0) in a few cases the students get seats on the basis of backing of group of students. In one American, two English, two Australian, two Indian, a Ceylonese, a Nepalese universities (scores 3·5 to 3·0) in most of the cases this factor exerts its influence. In one American, One English, one Indian and a Japanese universities (scores below 2·6) in all cases the students get seats in the students union because an influencial group of students is backing them. The practices in these universites are not democratic and sound. No response is there on this issue from the universities of Paris, Oxford and Harvard.

The third factor is the merit of the students. In a French University (score 5·0) the students get seats in all cases on merit. The practices in this university are the best and democratic. In one American, two Australian, a South African and a Canadian universities (scores 3·5 to 3·0) the students get seats in a few cases on merit. In two American, three English, three Indian, two Australian, a Nepalese, an Afghan, a Japanese universities (scores 2·6 to 1·0) the students get seates in no case on the basis of merit.

The fourth factor is the basis of the amount of money spent by the students. In one American, three English, four Australian, one Indian, a Nepalese, a Japanese, a South African, and a Canadian universities (scores 5·0 each) in no case the students get seats on the basis of money spent. The practices are healthy in these universities. In one Indian university (score 4·6) there is deviation in few cases some times. In two American, one Indian, an Afghan univesities (scores 4·5 to 4·0) the students get seats in a few cases on this basis. In one English (score 1·0) and one Indian (score 3·2) it shows the students get seats in all the cases in English university and generally in Indian university on the grounds of money spent by the students.

Suggestions

Students involvement within the university bodies should be based on the nature of the decisions being made by a specific body. In policy areas affecting students they should have a representative voice. In policy areas of a more operational nature, the involvment of students should be determined on the basis of the contribution which they might make.

The academic community includes not only teachers but also students. Therefore it was logical that students must be given representation on the university bodies. Moreover the associations of students will help the university administration to identify their problems and find solutions for them. Students genuinely want to participate in matters that affect them. The time is ripe for the participation of students in university administration, since any further delay would cause much damage to the future of universities; Students should be selected from different areas such as academics, sport, literary and cultural activities.

Joint council of teachers and students should be created. These should made responsible for the administration of certain programmes like sports, health and welfare of students. The view of the students on several matters of university administration be heard. Their views should be given due weight in the decisions of university bodies. The representation of students should be limited to such bodies which manage hostels, health centre and sports and welfare programmes and other co-curricular activities. The students should be taken into confidence in planning the policies of the university. They should be given equal opportunities to participate in all levels of the university administration. No favouritism on any basis should be practised.

Virendra Singh

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Communications

PRACTICE SCHOOL PROGRAMME AT BITS—A NEW CONCEPT IN HIGHER EDUCATION

The author had the opportunity of conducting the Practical School (PS) programme at RRL Jammu from 1977-78 to 1979-80. The PS programme is novel in its approach which brings the university and real life situations defined as production, research etc. closer wherein participation of student—teacher—professional experts in real life situations is called for.

The practice school method of education adopted at Birla Institute of Technology and Science (BITS), Pilani, Rajasthan can be best described as an attempt to institutionalise the efforts to bridge the gap between professional world and academic educational activities during under-graduation and post-graduation levels of disciplines of Engineering, Pharmacy, Science and Humanities. The entire effort in PS education is in terms of extending the programme of education and evaluation outside the classroom of a university. The PS programme is implemented at two stages as PS-I for two months during the summer vacation after the third-year (after 1979 onwards, during the summer vacation of the second year of all the four-year integrated programme) in case of five-year integrated science post-graduation and engineering undergraduation and after second year in the case of four-year integrated B. Pharmacy and as PS-II for one full semester of 5½ months in either of the semesters of the final year. The PS-I is only an industrial exposure and the PS-II is real professional involvement of the students in the on-going projects of host-organisations. The PS estabilishes classrooms designated as PS stations in the professional world defined as production, manufacturing units, engineering design, development and consultancy agencies, national research laboratories, social sciences, practicing centres, banks, centre for communication science, technology museums etc. In this PS stations, students of all the disciplines accompanied by university teachers involve themselves in inter-disciplinary and mission oriented real life problem solving efforts. In association with the professional experts, the university teacher who accompany the students to the PS station, identifies on-going projects and assignments in the PS centres, allots the same to the students, evaluates the students performances and gives them feed back. The university teacher in this programme is very important in building the much needed bridge between the professional world and the academic world. The main theme of the programme is manifold (i) giving chance to students to practice the theoretical knowledge in the professional world and gain leadership, like a medico or chartered accountant undergo internship, during the graduation period itself (ii) active participation of university teachers to help students to improve various latent attributes which are not normally surface out in class room teaching, (iii) channelising students men-power to execute projects of real life situations, (iv) running the university economically without wasting funds for artificially simulated labs and developing the university curriculum with the help of university teachers and professional experts participated in the programme.

Case Study at Regional Research Laboratory

The author had the opportunity to impart PS-II at RRL, Jammu for the following category of students as given in Table 1.

Table 1

DETAILS OF STUDENTS

Academic year	*Semester*	*B.Pharm*	*M.Pharm*	*B.E.*	*M.Sc.* *Chemistry*	*M.Sc.* *Biology*	*M.Sc.* *Technology*
1977-1978	I	3	–	1	–	–	–
	II	4	–	–	–	4	1
1978-1979	I	7	–	–	2	–	–
	II	8	1	–	1	–	–
1979-1980	I	4	–	–	–	–	–
	II	3	–	–	1	–	–
	TOTAL	29	1	1	5	4	1

While students working on the on-going projects of the RRL, various attributes of the students which are normally not surfaced out in the class room teaching were made aware of and evaluated such as (1) knowledge of concepts with which he is already familiar, newly introduced at practice school and depth of knowledge, (2) application of principles in a given situation, (3) intellectual ability to comprehened and act in new situations and to follow logical path in problem solving, (4) creativeness and originality in conceiving new and unusual ideas and suggesting practical and good solutions, (5) professional judgement and decision-making ability in evaluating alternatives, (6) inter-disciplinary approach in broad based knowledge and in problem solving situations, (7) skills for data handling in understanding of data gathering/processing technique, in choice of measurement tools and skills for hardware implementation, (8) documentation of review of literature and organising the material, (9) self expression in conveying ideas clearly, delivery and style of presentation, language, black board presentation, plat-form manners and introducting and ending of presentation, (10) initiative in taking lead in problem solving situations, (11) self-reliance, (12) co-operation with group, instructor and organisation, (13) leadership in organising the efforts of the group, moderating discussions and inspiring group members, (14) making forceful efforts to know more about industry, (15) sense of responsibility in meeting problem objectives, planning and meeting deadlines and punctuality, (16) social sense: ability to create good impressions and to act accordingly.

The various attributes of the students as mentioned above were evaluated through 2 quizzes, discussions, 3 seminars, two group discussions, two project reports. Half of these components from each were conducted before the mid-term of the programme following the evaluation schedule which takes care of total personality of the student. Just after the mid-term, feedback were given to the students about the performances to give chance to perform better in the next half of the components. Besides that observation, diary maintenance evaluation and a viva-voce were also integral part of assessment. The marks distribution for the various components are 15% for quizzes, 20% for seminars, 15% for group discussions, 25% for project reports, 15% for observation, 5% for diary and 5% for viva-voce. After the completion of the practice school programme, students are awarded "degree with practice school". Besides the degree a rating sheet was awarded to each student expressing the various personality trials such as knowledge and application of fundamental principles, intellectual ability, creativity and art of guestimation, professional judgement, problem solving ability, decision-making ability, ability to communicate, initiative and self reliance, team work, leadership, punctuality and ability to meet deadlines, sense of responsibility and common sense in term of a qualitative grade as excellent, good, average, poor, or very poor. The transcript also describe the personality as confident poised and curteous, should be less aggressive, pleasant curious and forceful, should be friendlier with group, likeable or should be more aggressive. Finally the transcript indicate the work for which the student is best suited. They are research, development, teaching, design, production, sales and markketing, finance, EDP, scientist, journalist or others. The analysis of the various components are the following:

(1) *Quiz:* This component was designed to test the knowledge and application of knowledge to practice. Unlike the quiz conducted in a classroom for which spoonfed classroom materials is the course, students took much interest in the quizzes about the real life situations.

(2) *Seminars:* This component was evaluated based on technical credibility, expression, communication and organisation of materials. In all three seminars were conducted for each students. In the first seminar which was at the start of semester, students introduced the projects they are going to handle by giving literature references, work plan and scope of the work. Thus the time bound objective was very clear for the students. The seminars were attended by the organisational experts also. The students mind were tuned to apply the theory into practice with the best co-ordination of teachers and professional experts. The second seminar was on a general topic or area related with project works. The third seminar which projected the work accomplished on the projects. All the seminars were evaluated and feedback was given after every seminars to improve upon the attributes. Thus in this platform, students were made to improve their personality of effective communication. A survey in my period indicated that 90% of the students were very poor to present in the first seminar, 50% of them could do well in the second seminar and 90% of them did exceedingly well in the final seminar. The presentation and communication is an art. Unless otherwise a formal introduction and feedback about the performance of the students are not included in the culture of education, university cannot deliver effective students.

(3) *Group Discussion:* The component was evaluated on intellectual ability, creativity, approach to problem solving and group behaviour. In all two group discussions were conducted for each semester which were attended by professional experts also. The first group discussion was general in nature. Barring a few, most of the students, although babbling with energy to participate, trail behind in participation because of inability to express thoughts forcefully and of diversion from the topic. Very few percentage were not able to participate. As silent observers myself and the professional experts counselled every students individually by giving what are the excellent attributes students had what are the attributes one is lacking and what are the attributes could be groomed further. Thus in this culture of formally conducting group discussions and giving feedback in the

practice school evaluation is unique than its classroom teaching counter part. The second group discussion, students were asked to discuss the various constraints in executing their projects and arrive at some practical solutions. In this process, students were projected as an expert and an understudy. Of course, certain time the young students ended in a commation. They have been taught group behaviour and leadership. My observations indicated could arrive logical conclusions to undo the constraints remarkably.

(4) *Project Reports:* The component was evaluated on technical credibility, methodology documentation and recommendations. The reports were about the project. They submitted interim reports in the mid semester. Thus they had been given a chance to review what had been accomplished and what more has to be accomplished. The second project reports were submitted at the end of the semester documenting the work accomplished. In this culture, student learn to collect literature, to choose the correct tools for experimentation, to interpret the data, to conclude and recommend the results of the project. In handling of the project in real life situations, student power was channelised towards nation building activities rather than wasting chemicals and men-power in the artificially simulated laboratories at the universities, just for the sake of imparting training.

(5) *Observation:* This was an important component. The evaluation stressed importance to how the students faired well in all the required attributes defined as above and how the students follow up the feedback given by the teacher to improve upon the attributes. I found that the culture of making the student aware of what was he expected to do gave jerk in his personality a healthy competitive behaviour needed for the real life situations.

(6) *Diary:* Students were made to maintain diary of what they accomplished in the day and what they had planned for the very next day. The diaries were followed up by the teacher everyday to decide student leadership behaviour.

(7) *Viva-Voce:* At the end of each semesters one viva-voce was conducted for each student. Comprising the teacher, the professional experts involved in the project and some other professional experts other than involved in the project to test the student understanding of subjects, projects. The basic aim of the component was to remove nervousness of students when they go for interviews for jobs after graduation.

In my period students had handled the on-going projects at RRL, Jammu, such as improvement in the yield of lysergic acid derivatives through submerged culture method, production of biomass, formulating vaccine into injections, sustained release vaccine esters, pharmacological screening of medicinal plants, plant contraceptives, fixed oils from seed, plant and fungal votatile oils semisynthetic pyrrolizidines and high alpha cellulose from fast growing plants. Around ninety per cent of the students had come out with a research publication at the undergraduate level itself.

This programme is centred around students teachers professional experts participation in real life situations. The students had learned to practice their theory knowledge. The teacher who participates in this programme, unlike the conventional teachers, can come out with a new idea of changing the curriculum of universities with the experience in real life situations and write text books along with industrial experts which are purely of Indian context. The industry or research organisation or any other real life situation can execute the projects with scientific student power. If all the universities link the student power with real life situations for the practice of students, the outcome will be towards nation building activities rather than duplicating some experiments. The mutually beneficial programme between industry—student—university is a break through in higher education. The universities can run economically without wasting their funds. Having achieved the PS programme by BITS in the past 8 years at 40 centres spread in length and width of the country for all branches of students such as engineering, science, pharmacy and humanities, the BITS practice school division has the flavour of real life experiences in terms of reports of practice school assignments which can be meaningfully utilized as a supporting teaching material and to identify areas of relevant research.

R. Manavalan

ROLE OF MEDIA TECHNOLOGY IN RURAL EDUCATION

While there is a great talk about audio-visual media in education, there seems to be the lack of instructional facilities and the prevalent dearth of qualified and trained teachers in media technology in our country. The Education Commission (1964-66) and All India Conference on Agricultural Education (1969) highly recommended that appropriate media should be used to stimulate student reactions to the courses and teaching. Somehow, teaching is mainly through oral lecture method in institutions of higher education which yield less gain and retention of knowledge among students. In primary and secondary education in rural areas, not adequate attention has been paid to teaching-learning environment which is far from satisfactory. In rural education, the most common media being used is the century old 'Black board,' which produces poor visual impact. Keeping in view the low academic standards & performances and need for rapid social-cultural transformation of illiterate rural masses in India, it is highly imperative to vitalise the system of education in general and rural education in particular by making use of the media technology.

Media Technology

Media technology is also called Educational technology. It refers to the integrated use of teaching tools and techniques in making learning effective and purposeful. The five steps involved in media technology are shown in fig:

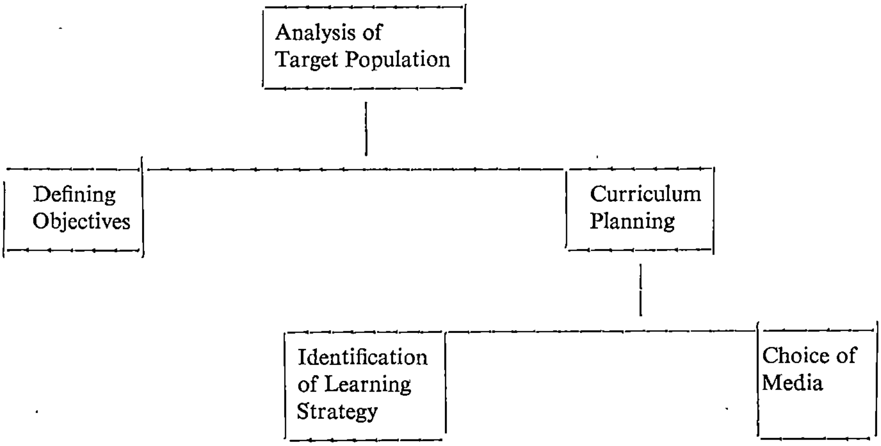
Analysis of Target Population
Defining Objectives
Curriculum Planning
Identification of Learning Strategy
Choice of Media

Fig: The Five Steps of Media Technology.

Until, recently there was emphasis on the use of single media in teaching and training programmes. The study made by the Somasundaram *et al*; 1972 revealed that we retain the knowledge acquired through reading (10-15%), hearing (20-25%), seeing (30-35%), seeing hearing (50%), and involvement of all senses upto 90%. The essence of this is that we should employ multisensory/mixed media approach in teaching-learning process to yield better gain/retention of knowledge. Indeed, audio-visual media serve as multisensory aids, the use of which in teaching makes the students more attentive and motivates interest thereby reducing the difficulty in the grasp of the subject. On the other hand, it also helps the teachers know more about the subjects and mention the vital points in a meaningful way, making it easier to explain in comparatively less time.

Purposes of Media Technology

The importance of using teaching materials and equipments has been felt by teachers at all levels, but at present due to neglect of rural education in the past, it is being considered a dire need. Although in University Education, when it is a question of presenting a seminar or delivering lecture to distinguished audience, speakers make intensive use of audio-visual media in their presentations. We treat a school as modern one if it is well equipped with audio-visual media. In formal and non-formal education, particularly in rural and backward areas, media technology can perform the following purposes:

(1) *Improving living standard:* Media technology is a powerful instrument which can be employed to change the traditional outlook of the rural masses and thereby improve the living standard substantially.

(2) *An end to social evils:* Rural India is beset with cumbersome problem like illiteracy which is a main source of many social evils. In an attack on social evils, media technology can influence the minds of people and attract them to go for education.

(3) *Checking drop-outs:* In the education of rural children, drop-outs are comparatively more at various stages of their schooling. The use of media in rural education will make the studies interesting and thereby reduce the number of drop-outs.

(4) *Distance teaching:* In a bid to provide education to all rural masses, opening of new schools is very expensive. With the help of media technology, distance teaching can be made possible and expenses on education can be minimised. In this direction, earnest efforts have been made by the Department of Extension Education, PAU, Ludhiana by starting Correspondence Course for rural youth.

Besides, media technology has immense role in adult education, continuing education and extension & training programmes for rural development. Studies after studies highlighted the scope of improvement in teaching and training programmes through the extensive use of audio-visual media. In an intensive survey in H.P. Agricultural University, Palampur, Gupta (1980) revealed that teachers favoured the use of audio-visual media for effective teaching but they showed their inability to use them due to lack of the requisite facilities.

Media Technology Cell

In view of the fact that a teacher needs a variety of instructional media for presenting information in a meaningful way, whereas he lacks facilities and the requisite skill to prepare and use teaching materials, Sandhu in his paper "Use of teaching aids," presented at the University level seminar on teaching method, PAU, Ludhiana (1971), listed the following reasons for not using teaching aids:

(1) Lack of basic faith in the utility of these aids.
(2) Non-availability of proper aids.
(3) Ill-equipped classrooms.
(4) Lack of training in the use of aids.
(5) Lack of facilities for the preparation of teaching materials.
(6) Limited financial support.

It is in the light of the above said reasons that the idea of "Educational Technology Cell, holds the promises to meet the needs of teachers in the developing world. Further, for" effective teaching, it entails methods for organising and utilising audio-visual and audio-visual media as elements of an integrated teaching-learning system. Hence, the setting up of "Media Technology Cell", is inevitable in teaching institutions and training centres in creating an environment for use of audio-visual media to strengthen instructional programme. It is more than a store-house of materials which helps teachers in selecting, preparing and utilising audio-visual tools in teaching. The teachers and students have free access to obtaining the required media from the cell. Further, to enhance regular and frequent use of media for rural education, the resources should be decentralized in a modest way at three levels—Class level, School level, State/National level,

Conclusion

In the rural and backward areas of our country, media technology has a vast potential to promote formal and non-formal education and thereby improving living standard, removing social evils, checking school drop-outs, etc. In order to achieve these purposes, System Approach of Media Technology involving analysis of target population, defining objectives, curriculum planning, identification of learning strategy and choice of media, should be employed. This calls for setting up of Education technology cell in institutions to help teachers in selecting, preparing and utilizing audio-visual media in teaching.

In order to facilitiate regular and frequent use of media technology in rural education 'Three Tier System of Media Resources' should be adopted. Further, radio and television have vital role in educating rural masses and thus should be linked with core-course curriculum and farmers' training programmes. To enhance self-learning on the part of rural students, programmed lessons and illustrated materials should be encouraged in schools and village libraries. It is also suggested that the post of audio-visual co-ordinator in schools/colleges should be created to guide and help teachers in the preparation and proper handling of instructional media.

M.P. Gupta

MAKING UNDERGRADUATE EDUCATION MORE RELEVANT—A MODEL DEVELOPED AT THE UNIVERSITY OF RAJASTHAN, JAIPUR

It has been emphasized time and again by our national leaders, educationists and University Grants Commission that the existing educational structure and content be altered and modified to the developmental needs, aspirations of the community and relevance to the rural and urban environment. This implies re-orientation of traditional educational system to the needs of the community and introduction of some relevant applied disciplines related to basic subjects or subject groups.

In spite of the dire need of restructuring of the educational pattern, so that it becomes more meaningful to our youths in their life and creates self-reliance among them, our universities could not make muchhead way in this direction. There is an inbuilt inertia in the faculty, in general, and among academic administrators in particular. This inertia could be overcome only if a viable model is developed, experimented and desired results achieved at least in a few universities. The Rajasthan University could develop a model and methodology for making undergraduate curriculum more relevant. This paper describes the work done at the University of Rajasthan, Jaipur by the seed money sanctioned by the UGC, New Delhi during the years 1979-81.

The Problem

The restructuring of the university courses (present day educational pattern) at first degree level so as to make them relevant to the rural environment, to the developmental needs and for the promotion of opportunities for self and to some extent wage-employment in the region is of complex nature and is significantly affected by a number of factors. Apparently, it is not possible to design and develop a universal curriculum (as we have to-day) at first degree level which is relevant to the socio-economic programme in a particular region. In fact it has to be different for different regions i.e., college to college. However, such educational pattern; if developed and adopted, must be acceptable to the community of the region and help in their socio-economic upliftment for otherwise it may be an another exercise in futility.

The present and ex-chairmen, University Grants Commission have clearly pointed out that the special attention needs to be given to the orientation of the existing courses towards rural problems without creating a completely different channel for such studies. The courses are to be reoriented in such a manner that students can apply their theoretical knowledge to the problems of the region through field work, project work, extention work, etc. In other words, the existing convential courses or pattern may be integrated with concrete problems related to agriculture, rural occupations, village industries, developmental activity and natural resources of the region. This in turn may promote opportunities for self and wage-employment in the region.

Thus, the task, of restructuring the existing educational pattern at the first degree level oriented towards socio-economic problems of the region is of very complex nature. Hence, it needs a very careful planning and thoughtful exccution. We have to be very cautious in taking steps keeping in mind that the new structure be useful and readily acceptable to the students and community of the region.

It was thought that there are immense potentialities in combining academic courses with the need based and self and wage-employment oriented courses relevant to the region at the first degree level. This will not limit (i) the academic options to the students for persuing postgraduate study and (ii) the existing available opportunities in their carreer. In fact this may increase the opportunities in their life.

Identification of Major Areas

An important requisite for development of an educational pattern, envisaged above, is the identification of major areas, on the basis of careful socio-economic analysis which indicates opportunities for self and wage employment and relevant to the needs of the community in the region. Therefore, to start with we undertook the analysis of the major economic activities and needs of the four regions namely (i) Tonk (ii) Banswara (iii) Pali and (iv) Lachmangarh-Sikar. The analysis is based on secondary data available in various central and state government publications. It was felt that the collection of primary data was neither necessary nor feasible. The analysis and findings are given in College Development Council, Annual Report 1979-80, University of Rajasthan, Jaipur.

The areas identified were as follows:

(*i*) *Tonk*

(*i*) Cultivation of groundnut and sugarcane and ancilliary cottage industries.
(ii) Rearing of livestock, specially cattle, buffallows, sheep and making use of various products of livestock particularly leather.

(*ii*) *Banswara*

(i) Cultivation of cotton and ancillary house hold and small scale industries.
(ii) Cultivation of cotton, sugarcane, rice and wheat.
(iii) Poultry development.
(iv) Forest development and utilization of forest products.

(*iii*) *Pali*

(i) Agriculture of oil-seeds, Bajra, etc. and marketing of Agriculture products.
(ii) Textile bleaching, dyeing and printing techniques, marketing or raw material and produce.

(*iv*) *Lachhmangarh-sikar*

Sheep and wool.

Selection of an Area for the Programme

With the above in view one day workshops were organized at the respective colleges. In these workshops district officers, prominent political and social workers, faculty, and students participated. The major areas identified as in section (iii) were discussed and the aims and objectives of restructuring curriculum were explained. As a result of deliberations and discussions in these workshops, the following consensus emerged regarding the restructuring of the present day educational pattern at undergraduate level.

((a) Under the existing structure need based subjects relevant to particular regions be started in respective colleges and students may be allowed to select one such subject along with two other subjects according to the faculties of Arts, Science and Commerce, a unique recommendation whereby barrier between various faculties may slowly disappear. This has far reaching consequences and for which UGC always pleaded with the universities without any result. The grass-root has forced the academic community to act in above direction, a reform badly needed in our educational system.

(b) Suggestion regarding starting new need-based subject as an additional optional subject together with three optional subjects one has to study in the present pattern, was not acceptable. This would unnecessarily put an extra burden on the students.

(c) It was suggested that a compulsory subject namely "Rural Development" be introduced. It may be offered by the students in place of HICC, General education, etc. This will enable students to know and appreciate the problems of rural development etc.

The broad scheme of undergraduate studies that emerged out of above suggestions is given in Appendix I which is self explainatory.

The areas selected for development of syllablii etc. by these workshops for respective regions are as follows:

TONK : Livestock and Leather
BANSWARA : Forestry (Emphasis on development and cottage industries based on forest product)
PALI : Dyeing and Printing
LACHHMANGARH-SIKAR: Sheep and Wool.

It was also suggested that in the second phase the course on other identified areas be introduced so that large student population is benifitted.

Involvement of Local Expertise

To make the syllabii for need-based subject more useful and reflect the needs of the region, it was thought that as a first step the local experts be involved in framing the syllabii. Consequence to this two-days workshops were organized in respective colleges in which local experts and a few academic journalists participated. In these workshops detailed outlines for various subject's requirements for faculty members, instructional staff and other technical and laboratory requirements were worked out. The recommendations of these workshops were placed before the respective committees of courses (Boards of Studies) formed by the Vice-Chancellor for finalization of course contents, etc. Each committee in turn examined and discussed the courses at length and finalized the syllabii marking schemes, qualifications for teaching and non-teaching staff, etc. The overall requirements and financial implications were also worked out. Each committee endorsed the broad scheme of education as given in Appendix I. It was very heartening that academic community respected the wishes of the grass-root and a new era has started in which community is involved in planning and decision making. The details of course contents and other things are given in a CDC annual report 1979-80. In Appendix II we have listed the papers to be included in particular need base subject, which shows how useful material is to be covered in each paper. We also find that there is an element of interdisciplinary approach which may make the syllabii more useful in achieving the aims and objectives discussed in sections I and II. Further steps have been taken to prepare instructional material for each paper which incorporates the local needs.

Summary

It is heartening to note that the Academic Council of the University of Rajasthan not only adopted the restructured scheme of education and syllabii, etc. but appreciated the methodology adopted and model developed for making education more relevant. In fact this can said to be the turning point (in past the academic community has always been susceptible to such changes) in re-orienting the present day educational system so as to go hand-in-hand with strong thrust for socio-economic transformation and developmental needs of the community in general and rural community in particular.

The restructured education pattern may become more useful if students are assisted in obtaining the necessary in puts and financial assistance for becoming self-employed.

We have clearly demonstrated how grass-root can be involved in planning, designing and re-orienting the pattern of education which is relevant to them. A strong foundation of the national reconstruction through restructuring education pattern has been laid. This is bound to improve the economic livelihood and way of living of rural community.

The University Grants Commission has agreed to give continuous financial assistance to the University of Rajasthan for extending the programme in most of the colleges and monitoring it.

Appendix-I

BROAD EXAMINATION SCHEME

The Broad Examination Scheme adopted at the first degree level was as follows:–

A. *Compulsory Subjects:*

- (i) English
- (ii) Hindi
- (iii) Any one of the following:–
  - (a) General Education
  - (b) H.I.C.C.
  - (c) Elementary Mathematics
  - (d) Rural Development (for Colleges offering need-based subject)

B. *Optional Subjects:*

SCIENCE	*ARTS*	*COMMERCE*
1. Physics	1. Economics	1. Accountancy and Business Statistics.
2. Chemistry	2. Sociology	2. Business Administration
3. Mathematics	3. Geography	3. E.A.F.M.
4. Geology	4. History	4. *Need-based Subject*
5. Zoology	5. English Lit.	
6. Botany	6. Hindi Lit.	
7. Geography	7. Sanskrit	
8. Economics	8. Philosophy etc.	
9. *Need-based Subject.*	9. *Need-based Subject.*	

Note: *The course content of need-based subject will be 50% theoretical and 50% practical and field work. There is a provision of on-line-job training of the students.*

Appendix II

In each subject (given below) six papers have been designed—two papers each for I, II and IIIrd year classes. *Practicals and Field Work would be compulsory and would get high weightage, 50% according to the needs of each subject.* The Committees of Courses recommended the provision of these subjects in all the three faculties:-

"*Sheep and Wool*" *for Lachhmangarh College:* Papers—

1. Elements of Sheep Husbandry.
2. Elementary Sheep Production.
3. Sheep Health and Nutrition.
4. Sheep Breeding.
5. Wool-grading and Processing.
6. Marketing of Sheep and Sheep Products.
   (Details are given in Appendix—K of report, 1980)

"*Livestock and Leather*" *for Govt. College, Tonk:* Papers—

1. Elementary Animal Husbandry.
2. Animal Nutrition and Breeding.
3. Elementary Leather Manufacturing.
4. Other Animal products and bi-products.
5. Elementary Leather Working.
6. Marketing Organisation and Management.
   (Details are given in Appendix—L of report, 1980)

"*Dyeing and Printing*" *for Govt. College, Pali:* Papers—

1. Textile Fibres and Chemistry of Water.
2. Bleaching and Mercerisation.
3. Chemistry of Colours.
4. Technology of Dyeing and Printing.
5. Finishing.
6. Marketing, Management and Financing.

"*Forest Resources and their Utilization*" *for Govt. College, Banswara:* Papers—

1. Forest Products, their identification and utility.
2. Fundamentals of Forestry.
3. Forest based Industries.
4. Forest and Anciliary Industries.
5. Marketing, Management and Entrepreneurship.

As mentioned in Section II the subject "*RURAL DEVELOPMENT*" is to be included in Group (iii) of Compulsory Subjects. In the workshop held for development of syllabii of this subject the following five units have been recommended:

1. Physiography-Natural Resources.
2. Concept of Rural Development.
3. Rural Economy.
4. Rural Social Structure.
5. Development, Administration and Planning.
   (Details are given in Appendix—J of report, 1980)

M.L. Sisodia and B.M. Agrawal

SOME COMMENTS ON THE MODERATION OF QUESTION PAPERS IN MATHEMATICS EDUCATION

In our educational system, examinations continue to be the chief tool of evaluating a student's performance. Examination system has a pivotal role to play in any educational system, because an efficient evaluation can in the long run contribute to good training. But then no field of education is more prone to criticism than examination system. According to the observation of the Education Commission in 1966, "most of the weaknesses in the present system of external examinations are due to defects in the questions and the question papers set for the examinations".

A question paper may suffer from the following deficiencies: (1) The question paper may not cover the syllabus, (ii) the question paper may contain questions outside the syllabus, (iii) some of the questions may be vague and not intelligible to the examinees and the valuer (if he is not the paper-setter), and (iv) some of the questions or the question paper as a whole may not cover the objectives of the course.

Specificity of questions has been studied in some investigations done in India. Lele (1962a, 1962b) and Hill (1967f) found that some questions set in our examinations were ambiguous. According to Lele, there were questions in the examination papers which were considered easy by students, but difficult by teachers. He came to the conclusion that this was possibly due to the differential difficulty of questions as seen by teachers and students that made these essay examinations unreliable. Hill (1967f) found that in the traditional question papers, generally no clue to indicate the length and scope of the desired answer is specified except the number of marks assigend to the questions.

Cieslak (1959) recommended that essay questions should be so framed that students should have no difficulty in knowing what the examiner wants. Ray (1970) advocated that questions should be structured so that they measure the objectives of the curriculum. In particular, there should not be any scope for different interpretations of the same question by students, paper-setter and examiners.

In order to minimse the deficiencies cited above, the question papers are moderated by a Board of moderators, whose duty is to examine all the questions thoroughly and see that the deficiencies mentioned are removed, so that the moderated version of the question paper may possess all the qualities of a good test paper. But it is often found that not much is done in the name of moderation. Sometimes when moderators interfere with the questions as set by the paper-setters, the moderated version of the question paper or the individual question becomes either too easy or too difficult. Also many-a-times in an examination, moderators change the questions in such a way that the paper-setters' objectives are lost. This may be due to the fact that moderators are not able to comprehend the meanings of the questions as viewed by the paper-setter.

Sometimes a paper-setter may set a question not with the sole purpose of evaluating the students' performance or achievement. He might wish to conduct certain studies regarding the format of a question or otherwise (particularly in the semester system which is gaining ground in our country). The purpose of this note is to illustrate, how the moderation of a question paper may altogether change the purpose of the questions. The following are the relevant illustrations:

(1) In case of one question, paper setter's original setting was as follows:– "What do you mean by 'pre-requisites' for a mathematics lesson?" This is a short answer type question. Here students are expected to write in brief what is meant by "prerequisites" or "previous knowledge" for a mathematics lesson.

This question was moderated as follows:– "Mention the pre-requisites for a lesson in mathematics. Illustrate your answer". The moderated version of the original question does not stay merely as a reworded version of the original question without its meaning content being changed. The moderated version becomes entirely different. First, whereas the original question is of short answer type, the moderated version is of essay type. Secondly the moderated version's meaning is entirely different. It requires the students to enumerate the components (e.g. subject-matter, technique, indivdual differences, teaching aids) which a teacher should take into account before planning a lesson, because there are certain pre-requisites for a successful lesson.

(2) In another case, one of the setter's compulsory questions was as follows:—"Suppose that you were constructing a questionnaire for your students to evaluate your teaching. Frame four questions that you would ask". In this question the setter wanted to examine the students' personal views of good mathematics teaching. Had this question been given as an assignment or a take home item, there was a possibility of student's consulting each other and their personal views in this connection would not have been ascertained. But in the examination situation they would have been required to give their personal views, for the question was compulsory.

The moderated version of this question was as follows:- "Mention any eight evaluative criteria you would list as part of a schedule for evaluating mathematics teaching". In answer to this question the students are expected to list such as adequacy of content, suitability of learning activities, use of teaching aids and evaluation items. But the original question was set to analyse the students' attitudes towards good mathematics teaching, whereas the moderated version calls for the general evaluative criteria as mentioned before.

(3) The following is an example of how a question can be ambiguous due to its structure:—"How would you ensure for the effectiveness of a curriculum over a period of time?" Here the phrase 'ensure for the effectiveness' may have two different interpretations. In the first interpretation, the students might be expected to list the criteria for evaluating the effectiveness of a curriculum on a long term basis. In another interpretation of this question, the students might be required to list the components which make the implementation of a curriculum successful over a period of years.

Let us look for the reason for the ambiguities in the question paper even after moderation. One single important factor which contributes to this sort of vagueness is the fact that generally the board of moderators is composed only of a few subject experts—sometimes none of these experts having any expertise in some of the papers they are expected to moderate.

As a remedy it is suggested that each question paper may be set or moderated by a panel of setters or moderators (as the case may be) having expertise in the paper. If possible, moderators may consult the paper-setter whenever and wherever necessary.

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V. Sankaram and K. Dorasami

IS ADEQUATE COVERAGE, A STRONG POINT OF A MULTIPLE-CHOICE OBJECTIVE TEST?

Experts in educational science often think that the chief merit of a multiple-choice objective test lies in the fact of adequate coverage and that is how it is more reliable (repeatability of results) and valid.

However, as achievement tests that our examinations ought to be do MCT's serve the purpose? Can they really give a complete or even an adequate measure of the students' all around achievement on undergoing a course of educational experience ? Do these tests engender those study habits which are the mark of learning ?

Let us consider Form No. 1064—"scientific knowledge and aptitude test" designed by a competent psychometrician of Indian Statistical Institute. The syllabus of General Science of the Higher Secondary Course (for 16-17 year—olds) was considered and all the technical procedures were followed. This is a one-hour test of 72 items drawn from several fields—Physics 56%, Chemistry 12%, Biology 16%, others 16%—intended to measure a candidate's *knowledge* in the field of sciences and his potential ability. As is realized by the setter himself, items often test knowledge that is part of every day common knowledge and thus the *coverage is superficial.* The test does not test 'what the student knows and what he is able to do with his knowledge' for want of specific testing tasks. The reliability index is 0.80, mean 42·40, s.d. 10·64. This means that even with this trivial test the score varied from 10 to 74 (or 15 to 68?). After studying the higher secondary course, the student is tested for basic beginning material (Board examinations are also superficial).

Out of the 72 items, on the face of it, 14 appear to be objectionable or need modification. For instance, take item No. 15 which runs as follows:-

Indicate the category in which it could be classified:

(1) Velocity of sound in vacuum; (2) Velocity of Sound through an iron rod.

A: Velocity stated in (1) is greater that in (2).
B: The velocity stated in (2) is greater than that in (1).
C: The two velocities are equal.

Here one is comparing something which does *not* exist with something that does. Is it logical ? Justifiable? Again item Nos. 4,12,15 are based on the same kind of information; hence triple reward or penalty.

If 20% of the items require reconsideration what is the point of 'coverage', the validity of 'validity' and 'item analysis'? Professional psychologists are supposed to administer such test and interpret the results. Basically, if an item has no 'content' validity the measurements of F.I. and D.I. are meaningless.

Consider again testing of a student's achievement in tackling problems in mensuration, simple interest, profit and loss, time-speed-work, of school arithmetic by converting the exercises to the MCT form. Such an attempt is a futile one; the test doesn't test the acquired ability and skill to *use* the knowledge of fundamental operations—It discourages the regular study of these topics. Because of laziness many would not be able even to get over the pass barrier. Such a surface sampling is not worth while. There is *no need* of such a wide and thorough superficial sampling. An improved traditional long-answer type questions examination (without any choice) can test the relevant abilities by selected significant sampling which would indirectly cover simpler tasks.

Again, consider an MCT of some 100-200 items covering the entire course of a dozen prescribed poems, asking 5 to 50 questions on each. Consider an item—

In the line 'The world is too much with us: late and soon', "The world" refers to—

(A) The earth on which we live; (B) the other countries of the world; (C) Heaven; (D) A spirit of materialism.

This item is considered to be an item not stressing only the memory-type of learning but also the 'deeper levels of understanding'. One fails to understand what deeper levels of understanding are tested when about 13% of the 'high' quarter of students fail to make the correct choice and 27% of those classified as the 'low' quarter answer correctly. The 'low' and 'high' grouping on the basis of such a test is then deceptive. The correlation between such a test and the essay type varied from positive 0·82 to negative 0·25. This is a clear failure of the objective test.

The sample objective question is the most prosaic way of testing understanding and appreciation of poetry. It does not make one recollect the line "Milton ! thou should be living at this hour!" What underlies is the heroic style, dignity of thought, passion of conviction and self-restraint. All these have no place when this kind of testing is done. Such tests would make students read mechanically without feeling. When one teaches representative sample, one draws attention to the kind of topics, his sensitiveness, metre, cadence, the situation that made him give expression to his feelings. There is no need to read every piece in the class; what matters is to give the student insight into each of the poet's personality and appreciation of each. Then the student can read on his own. The examination need not cover each and every piece; it should uncover the student's ability to appreciate any piece because of acquired insight. Mere coverage has no significance.

These are examples from tests set by experts. What then can be said of the general run of MCT !

How should one go about setting a question paper in, say, Electromagnetic theory at the B.Sc. level (text by Reitz & Milford) ? There are seventeen chapters of which 14 or 15 might have been prescribed. There is no need to cover all of them. In electrostatics, topics of (i) Boundary value problems and (ii) theory of the field in the dielectric, dielectric constant *or* any one of these topics and another will be adequate. The same can be done with current electricity, varying currents, alternating currents, coupled circuits, Maxwell's equations, Radiation, choosing about one topic only. In all six or seven well constructed improved long answer questions with (a) and (b) parts where necessary with searching problems will be adequate which will make the examination reliable and valid. It would test the student's knowledge including application and other desirable abilities which the MCT cannot hope to do.

An MCT cannot be an 'end-all' and 'be-all' of testing a candidate after completion of a course. One cannot escape the conclusion that not only the MCT has no superiority because of adequate coverage but also it cannot get rid of its basic limitations.

As one authority would state "If an educated person is one who can recall information, organise it, apply it and express results in his own words, then you must use essay test questions since this is the only form of testing that will test for these abilities."

The advantage of coverage is ficticious; what matters is the coverage that is significant.

R.D. Godbole

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Book Reviews

Chinese Educational Policy—Jan Ingvar Lofstedt. Humanities Press, N.V. USA 1980, pp. 204, No Price

China has been a much talked about but little written about country. Number of stereotypes in writings on China particularly in India is amazingly large. Our view of China consists of a series of sterotypes. The nervousness with which academic establishment in India reacts to any different thinking on China would indicate the desire not to leave the beaten track. Sometimes one gets a feeling that we perhaps cherish the stereotypes.

The stereotypes flourish because they provide easy answers to complex problems. The Chinese reality is complex. A student of China is as, Lofstedt the author of the book under review, has put it, "constantly intrigued by mixtures of western and oriental, traditional and modern, Marxist and non-Marxist and elitist and populist elements in the system." (p. 17). The revolution in China has not resulted in disappearance of all pre-revolutionary elements of thought and culture. At the same time, it has introduced some new elements of thought and culture. This makes the Chinese reality both bewildering and fascinating at the same time.

This book addresses itself to the history, development and analysis of "Chinese Educational Policy". The sub-title of the book 'Changes and Contradictions 1949-79' makes clear the enormity of the problem. One does not even know if one could talk of Chinese educational policy at all. It is really a series of debates, intra-party struggles, forces pulling in different directions and so on. Lorstedt's book documents these debates and these struggles very well. It is both a chronological and political study of the educational policy. The scope of the book is all education from the primary to the research stage. The book has excellent tables, a wealth of statistics and what is more, the entire discussion of educational policy follows closely the history of socialist construction in China. In other words, education and development have been placed in context and no attempt is made, mercifully, to device a pedagogical doctrine that is independent of the development perspective. In short, it is a valuable and well researched study of Chinese educational policy.

Having said that, one must add that the approach adopted in the book gives a whole lot of information but does not enlighten us sufficiently on the debate on the pedagogical doctrine in China. A pure pedagogical doctrine does not exist, cannot exist. Lofstedt's documentation demonstrates that neither Mao nor Liu (or Deng Xiaoping today) would dispute that. It is also not true that Mao has been taking consistently "radical" positions and Lia consistently "revisionist" positions. For example, during the great leap forward, it is Liu Shaoqi who was talking of the 'Cultural Revolution' (p. 96). He "sided with Mao on the question of Leap policy and, according to some, even went too far to the left saying that 'Communism is near at hand. " (p. 103). The chapter on the GLF (Great Leap Forward) thus makes it clear that Liu did not actually take as 'rightist' or 'revisionist' positions or Mao as 'leftist' or 'radical' positions as was made out during the Great Protetarian Cultural Revolution (GPCR) period later (1966-70). The pity of it all is that Lofstedt does not follow the directions his own data suggest to him. He has valuable chapters on the Soviet experience and the Taiwanese experience as a useful backdrop to the discussion of the Chinese experiment. He quotes a Stalin speech of 1932 which "called a halt to the differentiated treatment of the former intelligentia". "No discrimination on account of social origin was to be allowed", said a Party decree in 1935 (p. 58). Now the significance of stalin's position for the debates in China is obvious but Lofstedt does not quite successfully relate the two. The Central question in China has always been (whether in Education or in Socialist construction) how to describe and understand the so-called two-line struggle. The usual model of radicals and pragmatists does not help much and is certainly inadequate to explain the pre-1965 debates. The way the GPCR activists articulated their and the opponents' position on pedagogy world suggest (like in other fields) that it was a battle between the Marxists and their enemies. Such a simplified view of the dispute in the pedagogical debate would take us nowhere. Therefore, Lofstedt's uniritical acceptance of the People's Daily view of "Difference between the New and the Old Chao Yang System" (the model related to the Chao Yang Agricultural College) published in February, 1976 (p. 134) is a little surprising.

Although the book is quite impressive in its range, in the statistics and the information that it gives in abuntance; it is disappointing in that it fails to come to grips with the thrust of the pedagogical debate in China. This has led the author to the contradictory conclusion that "leadership contradictions have been most decisive in influencing policy changes although a more careful examination... may show that the fluctuations at that level have not been so pronounced and not quite in step with the pendulum swings at the policy level" (p. 187).

In short, after nearly two hundred closely printed (with some glaring printing errors) pages we are nowhere near acquiring an overall picture of the pedagogical debate in China. Yet the book has to be welcomed because it is one of the first of its kind and is a product of considerable research and scholarship.

G.P. Deshpande

The German University: A Heroic Ideal in Conflict with the Modern World, Daniel Fallon. Cilorado Associated University Press, Boulder, Colorado, 1980, Pp. XII 14/. Price 7.95.

Though reform movements and debates on the structure and function of the University in society characterise the development of Education in almost all European countries after the war, it would not be incorrect to point out that in the German States they were qualitatively different because the structure and function of the German University as developed in the 19th Century had unique ideological foundation, and because the University system itself emerged badly shaken out of the Fascist holocaust.

This modest book has grown out of an initial attempt to describe University reforms in the Federal Republic of Germany in the 60s, and 70s. The author quite correctly assessed that "an English-speaking audience would have difficulty understanding such an article without some broader background material." (p. xi) Hence the first five chapters of this book "were written to provide a description of the nature and structure of .the German University as it developed into its mature form in the nineteenth century, and to give some indication of its importance and influence." (p. 52).

Both the utility as well as the limitations of the book stem from its perspective. The description of the contemporary university in the FRG in the context of its past hopes to provide to answer to questions like: "What is the state of the university in the Federal Republic of Germany today, What happened to the model that inspired so many thoughtful scholars? How can the past of the German university be reconciled with its present or its future?" (p. 5).

Helmut Schelsky's now classic study of the German university "Einsamkeit and Freiheit" (2nd Edition 1971) with the significant subtitle "Idee und Gestalt der deutschen Universitat and ihrer Reformen" (Idea and shape of the German university and its reforms) was also informed by an attempt to analyse contemporary reforms in the context of an historical reconstruction. But whereas Schelsky tried—however idealistically—to present a sociological analysis, Fallon's essay lacks precisely the analytical and methodological perspective.

Fallon recounts the main events in the process of Prussian education reform, commonly associated with the name of Whilhelm-von-Humboldt, which led to the founding of a new type of Institution—the University of Berlin (1809-10). But the limitations of his approval becomes evident especially in the discussion of that cornerstone of the Humboldt-reform: the relationship of the University to the state and Humboldt's vision of an enlightened state which guaranteed the autonomy of 'interest-free' education in the university *against* the utilitarian interests of a developing society interested in the quick production of qualified personnel.

Fallon sees the success of this reform in the "simplicity and elegance" of the basic principles which Humboldt established as the cornerstone of the University. These, as is fairly well-known, asserted the Unity of research and teaching, the principle of academic freedom (Lehrfreiheit und Lernfreiheit) and laid emphasis on liberal education. But Fallon's basic defect consists in *reducing* the problems of the Humboldt University to *structure* i.e., the Philosophy behind the Humboldt University, its contradictions with society are not tackled. Why it became an anachronism is not explained. In other words, the historical-sociological explanation is lacking. The Author's interests lie in an accurate summary of the internal problems of university structure. Occasional attempts by the author to offer explanations are indeed romantically naive. Fallon notes that though other intellectuals and administrators also spent time and effort on educational reforms, the concept of a new university is exclusively linked to the name of Humboldt. But his explanation of this "paradox" is: "First, Humboldt was a clear-thinking intellectual with practical government expertise who could in fact firmly insure that the University of Berlin be established auspiciously and with the highest intellectual standards. Second, the *Zeitgeist* provided the possibility for an individual person, one could say a hero, to unify and resolve authoritatively the tension generated by various passionately held ideas of similar intent but very different details." (p. 14).

By reducing the concept of the German University to its organisation Fallon underplays what is perhaps the crucial aspect of this unique endeavour: its utopian content. This is precisely the reason why the German University became and had to become an anachronism in the post war period. Humboldts notion of autonomy guaranteed by an enlightened state was an illusion understandable, as Habermas has pointed out in a different context, in the era of early bourgeois development. It collapsed with the transition to monopoly capitalism the interests of which encompass both the content and organisation of teaching and research. For precisely this reason the discussions about reform in the sixties held up the Humboldtian ideal as a negative criticism against monopoly interests which in the form of Pragmatism reduced university reform to adaptation to the needs of society. The question who decides these needs was ignored.

The second section of Fallon's book devoted to post war history is more useful. From the initial restoration of the Humboldt university in the FRG, Fallon takes the account upto the Federal Coordination Law (1976) by which time some measure of coherence in the West German education system and a number of reform towards democratisation of the University structure were effected. Most notable among these reforms relate perhaps to the increasing participation of junior faculty and students in the academic and administrative affairs of the University. Here Fallon's summary is useful, as also in his account of the political tensions between progressive reform measures of the SPD/FDP coalition and the conservative CDU/CSU reaction. It is interesting to be reminded by Fallon that in post war FRG because higher education budgets quickly became "by for the largest part of an individual state budget, the minister of culture in each state became one of the most prominent, in some instances most powerful political functionaries in each state". What a contrast to India where neither budgetory allocations nor Ministerial powers are commensurate with the importance education is supposed to have in society.

Anil Bhatti

Structure and Performance of College Education by Rudolf C. Heredia, Somaiya Publications Pvt. Ltd. pp. 192. Rs. 65.

At a time when the quality of higher education has become a live issue, the importance of the study of college organization cannot be emphasized enough. This is so because in India college still remains the principal vehicle of higher education. Also because much of the college education is still under the control of private agencies. This notwithstanding, little sociological research has been done on this subject in India. Hence, the present book is a welcome contribution.

An edited version of a doctoral dissertation, the book attempts a systems analysis of the internal organizational dynamics of college education in terms of its institutional structure and educational performance. Based on a sociological survey of 22 arts and science colleges of Bombay, it has drawn its materials by means of a questionnaire covering a stratified sample of 440 teachers.

The central concern of the study is the structural analysis of the organizational characteristics of college as an academic social system. A formal systems model of input, throughput and output is used as a theoretical scheme. In the category of input is included resources—both material and human—with a focus on financial stress and human constraints. As a part of human constraints, a thumbnail sketch of the professor profile is offered which reveals a definite bias to communal selection of teachers by colleges, thus implying a certain closed particularism, though the seniority rule does indicate a certain universalism, albeit a bureaucratic one. The profile that emerges from the data is more of a salaried employee than of an autonomous professional.

The institutional structure, a mediating throughput, is elaborated in the context of the well known dilemma of organizational theory, namely the dilemma between bureaucracy and professionalism. Paternalism is added as a third structural characteristic. The decision-making process is used to operationalize these and the antecedent effects of resource inputs on them are studied. It reveals a rather skewed distribution of authority and a predominance of bureaucratic criteria. Thus the colleges here have a high degree of paternalism and bureaucratization, and a low professionalization. The corporate response of faculty unionization is examined against these organizational characteristics and the possibilities for a greater professionalization are sketched.

The educational performance outputs are analysed in terms of three related components: faculty role performance, innovative institutional change, and examination performance. Certian dilemmas are delineated in these performance spheres. In respect of faculty role performance, the teaching-research dilemma is posed. The study reveals dominance of the pedagogic emphasis over the academic one, implying thereby that scholarship is not part of the institutinalized role of the college teacher. The dilemma between communicative flexibility and coordinated stability forms the context of innovative change. The study reports low level of innovation in college education at the institutional as well as departmental level, and attributes it to paternalism and bureaucratization. In respect of college performance in university examination, the vicious circle between institutional selectivity and examination results is underscored. In fact, the dominating effect of institutional selectivity on examination results emerges as an inescapable conclusion from the analysis. Because of overstress on the certification function of education, it is argued that examination results have become the operative goal of the college, displacing others more genuinely academic.

From a sociological point of view, a more fascinating part of the analysis is concerned with the influence of structural characteristics on the performance of college education. How the peculiar structural sensibilities of our society are reflected in the college organization and how they impinge on the educational performance is very clearly brought out in the book. Thus members in an organization might have strong paternalistic expectations that are culturally induced, and for the same reason be quite disoriented in a professionalized structure.

The book calls into question the "funtional efficiency" of the affiliating system in a transformed social context. It also makes some constructive policy recommendations. The resource concentration, the academic professionalization, and the systemic decentralization are recommended as measures of strategic restructuring of college education.

The book is a scholarly piece of research—dispassionate, objective and well decumented. It merits admiration for a sharp theoretic sensibility, a fine-tuned quantitative analysis, and, above all, a capacity to structure the issues. The analysis is atonce penetrating and thought-provoking.

The book has its own limitations which stem from its theoretical commitments and methodological preferences. Because of its commitment to systems model, it has neglected to examine the data in terms of other theoretical perspectives. What is more, at places it appears that the author is at pains to fit the data in the torture chamber of systems model. This makes the treatment of data cumbersome and presentation scholastic. Similarly, because of the author's preference for sophisticated quantitative analysis, he could not help collapsing 24 colleges into one aggregate unit, thus missing the significance of the variations in the organizational ethos of these colleges. How much one wishes that the author had shown the variations in the college structure and performance by classifying them according to their managing agencies.

On the whole, the book makes a valuable contribution to an important but neglected aspect of higher education in India. The subject is as fascinating as it is challenging. More research is needed on the subject in some other states of India, particularly in U.P. and Bihar.

Anyone interested in higher education will find this book useful.

S.L. Sharma

Higher Education and the Labour Market in the Philippines by Bikas C. Sanyal, Woldos. Perfecto and Adrians A. Arcelo (Paris, United Nations Educational, Scientic and Cultural Organisation/New Delhi, Wiley Eastern Ltd., 1981). pp. 316. Price not quoted.

In the early 1960s the Organisation for Economic Cooperation & Development conducted a series of studies on manpower planning with implications for education in several OECD Countries. The growing unemployment among the educated in the 1970s through out the world including the OECD countries suggesed that manpower planning could not be successful in serveral non-communist countries of the world. The situation at the same time indicated the necessity for effective manpower planning—a close correspondence between labour market and the educational system particularly the higher education. So in the middle '70s the International Institute of Educational Planning began taking serious interest in the problem and initiated a series of research projects on higher education and employment in several countries of the third world. The present case study of Philippines is one in this series.

Being an ex-colony itself, the study on philippines is of particular interest to many of the Asian Countries for its own similarities and dissimilarities with other third world countries. Philippines ranks at the top among the developing countries with respect to socio-economic development indicators. The per capita income of Philippines is about a US $600. About 88% of the adult population are literate, Primary education is universalised already. About half the population of the concerned age-group are in secondary schools and about one fourth in colleges. Among the third world countries the Philippines has the largest enrolment ratios at secondary and tertiary levels of education. It is a small country with 47 million population. 5.2% of the labour force or about one-third of the workforce are unemployed. Some more characteristics with serious educational implications can be noted: 70% of the population of the country are under the age 25; unlike in many other developing countries, 90% of the institutions of higher education belong to the private sector, receiving no subsidies from the Government. 85% of the enrolment in higher education is concentrated in these private institutions and 92% of the expenditure of the private institutions is met from student fees.

The subject matter of the study under review was organised into eight chapters. The first chapter outlines the ojectives of the study, the methodology adopted and some of the major findings of the study. A complete socio-economic and demographic profile of the Philippines is given in chapter 2. Chapter 3 contains an interesting account of the development of educational system in the country. An assessment of the empirical relationship between manpower planning and educational planning forms the subject of chapter 4. Aspirations and expectations of the students regarding their educational careers, professional careers and of the higher education system in the country are described in chapter 5. Interestingly the chapters 6 and 7 are devoted respectively to employees' and employers' perception of the employment process and the linkages between education system and labour market. Thus the chapters 5, 6 and 7 are based on primary information collected through questionnaries. The last chapter derives from the study implications for educational planning in general and planning higher education in particular.

What is the contribution of this study? The study provides an essential starting point for those who wish to make similar investigations into the problem of higher education and employment nexus. Second important contribution of the study is the valuable information on the Philippines at regional level. Third major contribution is of course the detailed results of the survey data, besides documentation of the few manpower studies conducted earlier in the Philippines.

With the empirical results stemming largely from the information collected through questionnaries, provided in great detail at disaggregate levels, if not disjointed, the study provides an uninterested reading. There are several important ommissions also. To start with, it should have been attempted in identifying the major factors resulting in unemployment and under-employment of the educated, while the factors responsible for growth in demand for higher education are identified.

This is largely because the study relied solely on field information, while causes of unemployment could be analysed with the help of investigation at macro level.

In an important chapter (4) titled 'Manpower Planning on Educational planning', it is intrigueing to ignore the importance of analysing separately private and public higher education. The differences in quality between private and state institutions of higher education are also relatively ignored. Further it is not very clear how private institutions meet the private demand for education and the implicit statement that state institutions meet social demand for education, which is "manifested traditionally through manpower requirements" (p. 114). The results of the earnings function should have been analysed further in detail (pp. 222-4). It is interesting to note that neither education nor socio-economic status variables turned out to be dominant variables in explaining in variation in earnings. Occupational classification, age (not experience), and the sex turned out to be the 3 most important variables. Education ranks 6th and 9th in the list of variables. Above all, in a 'competitive labour market' and a higher educational system predominantly dominated by 'pure' private sector relying on students fees to the extent of 92% of their expenditure, fees plays an important role in forming effective linkages between educational planning and manpower planning. The reviewer fails to find any discussion on this issue.

On the other hand the implications that were drawn from the study are quite general, such as: The crucial elements that could hasten the attainment of employment and career objectives must be supportive; the school system and its curricular programme and the economy, especially the employers of graduates must coordinate their respective roles (p. 225); and higher education system should have precise information on the role it could play in supplying the type, the kind and the quality of skills the economy would be capable of employing (p. 276); etc.

The study makes one important contribution: it stresses the necessity of (i) development of labour market information systems, (ii) strengthening the baseline data in the Philippines including compilation of data especially on higher education and (iii) above all, effective manpower planning—manpower forecasting techniques should be developed and consequently adopted whichever suit the economy's characteristics and expectations.

Jandhyala B.G. Tilak

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B 49	Social Facilities and Services for Mothers and Children in Ratnagiri Dist.	Asha Rane	58-00
B 50	Altruism in Children—A Cross-Sectional Study of Boys in a Welfare Residential Institution.	Usha Naidu	35-00
B 51	Health Situation of Youth in India.	Usha Naidu and Parasuraman	30-00

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STATISTICS AND INFORMATION

University Development in India*

The University Grants Commission publishes every year a statistical review of the Development of University and Collegiate Education in India.

The following reviews have been published so far.

1. *University Development in India,* 1961-62. 1962 pp.76
2. *University Development in India,* 1962-63. 1963; pp.69
3. *University Development in India,* 1963-64. 1964; pp.106
4. *University Development in India,* 1964-65. 1966; pp.178
5. *University Development in India,* 1965-66. 1968; pp.266
6. *University Development in India,* 1966-67. 1969; pp.288
7. *University Development in India,* 1967-68. 1971; pp.324
8. *University Development in India,* 1968-69. 1972; pp.467
9. *University Development in India,* 1969-70. 1973; pp.488
10. *University Development in India,* 1970-71. 1974; pp.524
11. *University Development in India,* 1971-72. 1976; pp.572
12. *University Development in India,* 1972-73 to 1976-77. *Part I Section A: Universities, Colleges and Enrolment,* 1979; pp.1-579.
13. *University Development in India,* 1972-73 *to* 1976-77. *Part I Section B: University Departments, University Colleges and Affiliated Colleges,* 1980; pp. 580-948.
14. *University Development in India,* 1972-73 *to* 1976-77. *Part I Section C: Postgraduate and Research Enrolment,* 1981; pp.949-1280.
15. *University Development in India,* 1972-73 *to* 1976-77. *Part II Section A: Examination Results* 1973 *Annual*+1972 *Supplementary;* 1974 *Annual*+ 1973 *Supplementary* 1980; pp. 1-394+xi.
16. *University Development in India,* 1972-73 to 1976-77. *Part II Section B: Examination Results* 1975 *Annual*+1974 *Supplementary* 1981; pp.394-785.
17. *University Development in India,* 1972-73 *to* 1976-77. *Part II Section C: Examination Results* 1976 *Annual* + 1975 *Supplementary* 1981; pp. 786-1119.
18. *University Development in India,* 1972-73 *to* 1976-77; *Part I Section D : Postgraduate and Research Enrolment* 1982; pp. 1290-1669 + vi.

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*Available from Publication Officer, University Grants Commission, 35, Ferozeshah Road, New Delhi-110 001.

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University Vice-Chancellors: Profile of the Educational Elites

UDAY DESAI

A great many books, articles, monographs and reports have been written on the subject of Indian universities. Yet little is known about the men (and a rare woman) who preside over these institutions.

We are told that the vice-chancellor is the first among unequals in university hierarchy,[1] that he (or a seldom she) has to provide the leadership, to set the direction, to move people and things if anyone is going to.

Vice-chancellors, in addition to being important as the chief executives of universities, are at the apex of the higher education establishment in India. They are, as a group, the elites of higher education. It may well be argued that given the historical, political and organizational context of the total education system in India, they are the elites of the entire Indian education system.

We know a little about Indian administrative elites from an excellent study of their social background.[2] We also have at least two major published studies on the social background of Indian managers.[3] One of these also covers their career patterns.[4]

We are aware of no comparable study of educational elites. We do not have such basic information as the socio-economic and education background or the career patterns of Vice-Chancellors. Does a bright but poor country boy have a better chance of making it to the top of the education establishment than he has in the more "parochial" business world or in the more "exclusive" world of administrative elities?

This study is an attempt to fill this gap in our knowledge. The paper presents socio-economic and career profiles of the educational elites, the Vice-Chancellors.[5] We first present basic information on the social, economic and educational background of the Vice-Chancellors and their parents and on the occupations of their parents and grandparents. The social origins of Vice-Chancellors are compared with those of managers and administrators, and the occupational mobility of Vice-Chancellors' families over three generations is analyzed.

The next section analyzes career patterns of Vice-Chancellors and their tenure in office. Lastly the summary profile of the Vice-Chancellor is presented.

Socio-Economic Profile

The long tradition of "elite" and "ruling class" studies is based, primarily, on the assumption that individuals from similar social (class) origin think and act alike, often without conscious plan, to protect their privileged positions in the society. The recent interest in and arguments for 'representative bureaucracy' are also based on this assumption.[6] There is considerable debate over the extent and exact nature of the influence that social characteristics have on the actions and decisions of individuals. Other factors certainly influence actions: they may even be the most critical determinants of action. Nevertheless, social and personal characteristics play some role. The continuing interest in studying the social background of important decision makers and in increasing their representativeness clearly indicates the importance placed on these factors, both by scholars and by policy makers.

Socio-Demographic Profile

What personal and social background do our Vice-Chancellors come from? How old (or young) are they, on the average? Are they mostly male and married? In the case of India caste is considered to have a major role on one's attitude. What is the caste background of our Vice-Chancellor? Whether one's family lived in an urban or a rural area would also influence both opportunities for social mobility and social attitudes. This may be particularly important in the case of India where there is a tremendous disparity in the availability of educational, cultural and professonal resources between urban and rural areas. Are most of the Vice-Chancellors urban folks? These are some of the questions we now turn to:

(1) *Sex:* Vice-Chancellorship is and has been a male domain. Traditionally a woman has been Vice-Chancellor of the women's University in Bombay. It is, however, quite rare for a woman to be Vice-Chancellor of a "non-women's" university. Only one of our 112 respondents is a female, a past Vice-Chancellor of a women's university. (The present Vice-Chancellor of this Women's University is also female, but she did not respond to our questionnaire.)

(2) *Marital Status:* An unmarried Vice-Chancellor is unheard of. The incidence of Vice-Chancellors, past or present without a spouse is very slight. Only 10 of our 112 respondents were widowed or separated.

(3) *Age:* The average (mean) age of present Vice-Chancellors is 54.2 years. Half of them are over 56 years old, See Tale 1. In the Indian context, where most government employees must retire at the age of 58, Vice-Chancellors are certainly not a young lot. Vice-chancellorship is clearly the apex and the end of the career of these men. It is the final destination, a culmination of long years of hard work and fortunate breaks.

Table 1

CURRENT AGE OF VICE-CHANCELLORS

Age in Years	*Past V.C.** (*Per cent*)	*Present V.C.** (*Per cent*)
45 or below	2·1	0·0
46 - 50	12·8	3·1
51 - 55	31·9	6·2
56 - 60	31·9	9·2
61 - 70	17·0	47·7
71 - 80	2·1	26·2
81 or above	0·0	6·2
No answer	2·1	1·5
Average Age	56·4 yrs	67·6 yrs

**Percentages do not add up to* 100 *due to rounding.*

(4) *Urban-Rural Origin:* Table 2 shows the breakdown of our respondents' origin into three categories: city, town and village. The data indicates that 39.3% of the respondents spent their early life (up to 12 years of age) in a village while 40.2% spent their early life in a town. Only 20.5% said they were brought up in a city. If we combine town and city respondents as representing "urban" origin and consider village as "rural" origin, we have 60.5% of our respondents from "urban" origins and 39.5% from "rural" origins. This is in contrast to the population as a whole in which 82% are classified as "rural" and only 18% as "urban".[8]

Table 2

URBAN-RURAL ORIGIN OF VICE-CHANCELLORS

Origin	*Vice-Chancellors* (*Per cent*) $n = 112$
Village	39·3
Town	40·2
City	20·5

However, Vice-Chancellors better represent India's urban-rural distribution of population than Indian managers. Only 20% of Indian managers indicated that they were brought up in a village[9] as opposed to almost 40% of the Vice-Chancellors. Rural upbringing is twice as common among educational elite as it is among the business elite in India. There is an interesting difference between past and present Vice-Chancellors in urban-rural distribution. 35% of the past Vice-Chancellors report their background as "rural" while 45% of the present Vice-Chancellors say they come from "rural" background. This may indicate an increasing levelling of rural-urban differentiation among Vice-Chancellors.

(5) *Religion:* Among Vice-Chancellors, Hindus and Christians are over-represented, in proportion to their percentages in the population at large. The Sikhs get close to parity, while Muslims are grossly under-represented. Other religious minorities such as Buddhists, Jains, Parsis and Jews are also under-represented as shown in Table 3. This pattern is broadly similar to the pattern among the IAS. Distribution by religion among managers is also broadly similar to that among the Vice-Chancellors. There is a slight under-representation of Hindus among managers whereas Hindus are over-represented among both IAS officers and Vice-Chancellors.[10] The over-representation of Jains and Parsis in management compared to their substantial under-representation among Vice-Chancellors calls for no special explanation, considering their "traditions of entrepreneurship and management."[11]

Table 3

VICE-CHANCELLORS' RELIGION
(PER CENT)

	Hinduism	*Islam*	*Christianity*	*Sikhism*	*Others*
All V.Cs. (n=112)	92·00	2·6	2·6	1·7	0·9
% of India's population (1961 census)	83·51	10·96	2·44	1·76	1·33
Representational Coefficient	1·1	0·24	1·07	0·97	0·68

It has been suggested that differences in the prevalance of college education among different religious communities may explain the difference in their proportions among managers.[12] However, in the case of Vice-Chancellors, this does not seem to be the case. Table 4 shows the enrolments of males in colleges and universities in India in 1932-33. The high proportion of Christians, Sikhs and Parsis in college is not reflected in their share of

Vice-Chancellorships. However, the low college enrolment among Muslims may be a contributing factor to their very low share of both Vice-Chancellorships and management positions.[13]

Table 4

PROPORTIONATE SHARE OF THE VARIOUS RELIGIONS IN THE POPULATION OF MALE COLLEGE STUDENTS IN 1932-33

Religion	*Male Students in Colleges* (*Per* 10,000 *male population*)	*Ratio*
Hindu*	6·94	1·01
Muslim	4·00	0·58
Christian	16·38	2·37
Sikh	14·13	2·05
Zoroastrians	187·60	27·19
All Religions	6·90	1·00

**Includes Jains*
Source: S. Jain, Indian Managers, op. cit. pp. 74, *Table* 27.

(e) *Caste:* The distribution by caste is shown in Table 5. The percentage of Brahmins is nearly the same in all three groups (39.8 among Vice-Chancellors, 38.8 in the IAS and 41.4 among the managers). However, there is a substantial difference between Vice-Chancellors and the other two groups in the percentage of Kshatriya/Rajputs. 22.3% of Vice-Chancellors are Kshatriya/Rajput while only 10.2% of the IAS and 6.5% of the managers are from that caste. Not a single respondent comes from scheduled castes or tribes,[14] although they make up over 20% of the Hindu male population in India. In contrast, Brahmins make up only about 6.6% of that population, while they make up 39.8% of the Hindu Vice-Chancellors.[15] This may be changing, however, since there is a noticeable difference between the percentage of Brahmins among past and present Hindu Vice-Chancellors. Among past Hindu Vice-Chancellors 48.3% were Brahmins while only 27.9% of the present ones are Brahmins.

When religion and castes of Vice-Chancellors are considered together, one overwhelming feature emerges. Religious minorities and scheduled castes and tribes are grossly under-represented. The case is the same among administrative and managerial elites. Minorities and lower caste Hindus are grossly under-represented among all three elite groups.

Family Influences

Social scientists by and large accept the premise that one's father's occupation and income are the primary, though not the sole determinants of one's class of origin.[16] In addition, studies on government and business elites

Table 5

VICE-CHANCELLORS' CASTE

	Brahmin (Per cent)	*Kshatriya/ Rajput (Per cent)*	*Vaisya/ Bania (Per cent)*	*S.C./S.T. (Per cent)*	*Other (Per cent)*	*None or No response (Per cent)*
All V.C.s (n = 112)	39·8	22·3	6·8	0·0	25·2	5·8
Past V.Cs (n = 60)*	48·3	20·0	6·7	0·0	23·2	1·8
Present V.Cs (n = 43)*	27·9	25·6	7·0	0·0	27·9	11·6
% of India's Male Population (1931 Census)	6·6	28·8	2·9	20·8	40·9	–
Representational Coefficient	5·55	0·71	2·16	0·0	0·57	–

**Includes only Hindu Vice-Chancellors.*

have indicated that the father's occupation influences the son's opportunities for social mobility.[17] What is the family income and educational and occupational background of Vice-Chancellors? What occupational mobility have their families experienced? What are their social class origins?

(1) *Parental Origin:* About 57% of the Vice-Chancellors describe their father's origin as urban and 40% as rural, (Table 6). This is almost identical to the pattern of the Vice-Chancellors' own origin (60.5% urban and 39.5% rural). Clearly, there was little migration to speak of, from rural to urban areas among fathers of Vice-Chancellors, at least during the early life of most Vice-Chancellors.

Table 6

URBAN-RURAL ORIGIN OF VICE-CHANCELLORS' PARENTS

	Urban (Per cent)	*Rural (Per cent)*	*No Response (Per cent)*
Father	57·1	40·2	2·7
Mother	46·3	50·0	3·7

About 50% of the Vice-Chancellors described their mother's background as rural. This difference between father's and mother's origin is not difficult to explain since many urban families maintain close social ties with their village and often choose brides from the village.

(2) *Parental Income:* About one quarter of our respondents come from families whose income was Rs. 100/- or less per month (when this respondent started full-time work) and over half are from families with parental income of less than Rs. 300/- per month. 39% come from families with parental income of between Rs. 300 and Rs. 2000 per month. Only 9% come from families with income of over Rs. 2,000 per month,[18] (Table 7). If we consider families with Rs. 100 per month income poor or near poor and consider an income of between Rs. 101 and Rs. 300 per month as lower middle income, and an income of between Rs. 301 and Rs. 2,000 per month as middle and upper middle income, and consider families with an income of over Rs. 2,000 per month as rich,[19] the percentages of Vice-Chancellors from poor or near poor, lower middle, middle and upper middle, and rich families are 24%, 28%, 40% and 9% respectively.

Table 7

PARENTAL INCOME OF VICE-CHANCELLORS

Income Per Month	*Per cent of V.C. Parents*
Up to Rs. 100	24
Between Rs. 101 and Rs. 300	28
Between Rs. 301 and Rs. 500	14
Between Rs. 501 and Rs. 1000	19
Between Rs. 1001 and Rs. 2000	6
Rs. 2001 and above	9

(3) *Father's Occupation:* The occupations of the fathers of the Vice-Chancellors are shown in Table 8. A small percentage (18.7%) come from small farmer-peasant/artisan parentage. 31.9% of them come from elite occupations such as higher civil service, medicine, engineering, law, business executive and college professoriate. 7.5% of the fathers were large land lords or zamindars and 8.4% of them were owners of large businesses. 33.5% of the fathers had non-elite white collar occupations such as lower level civil service, school teacher, draftsman, priest and small business.

A comparison of Vice-Chancellors' fathers' occupations with those of Indian administrators' (IAS and IFS) and Indian managers' is shown in Table 8. Higher civil service is much less prominent among Vice-Chancellors' fathers than among both managers' and IAS officers' fathers. Only about 12.1% of Vice-Chancellors reported their fathers' occupation as higher civil service, while over 20% of the managers and 26% of the IAS did so. While only 10% of the managers and 17% of the IAS reported that their fathers had lower civil service jobs, 19.6% of Vice-Chancellors' fathers fell into that category. School teachers made up 13.1% of the Vice-Chancellors' fathers but only 4% of the managers' fathers and 6.5% of IAS officers' fathers. Similarly, almost 19% of the Vice-Chancellors' fathers were farmers or peasants, while only 1.2% of IAS' fathers and about 6% of the managers' fathers were farmers/peasants. Clearly, more Vice-Chancellors come from a lower occupational family background than do either the IAS or the managers.

Table 8

FATHER'S OCCUPATION : VICE-CHANCELLORS, IAS, MANAGERS

Occupation	*VC's Fathers* (%)	*IAS's Fathers** (%)	*Managers' Fathers**		
			Jain Study (%)	*Subramaniam Study*	
				Group I (%)	*Group II* (%)
Higher Civil Service	12·2	26·5	18·5	24·3	21·4
Medicine	1·9	5·1	15·0	4·7	3·9
Law	7·5	6·8			
Other Learned Professions	4·7	3·3	3·0	0·3	3·4
Business Executive	0·9	5·9	12·8	6·2	9·3
College Professoriate	4·7	4·7	3·0	3·6	3·3
Large Landlord (Zamindars)	7·5	11·2	5·0	3·5	5·5
Large Business Owner	8·4			5·7	2·6
Small (Petty) Business Owner	0·9	8·6	15·8	6·9	7·7
Business Employee	0·9		13·8	8·2	3·3
Lower Civil Service	18·7	17·1		10·0	9·3
School Teacher	13·0	6·4	4·8	4·3	3·2
Farmer-Peasant	18·7	1·2	8·4	5·8	3·4
Others	–	–	–	5·6	13·8

**Data from S. Jain,* op. cit, *pp.* 44-46 *and V. Subramaniam,* Op. cit, *pp.* 72-73, *Table* 10. *Percentages do not add up to* 100 *in original sources.*

(4) *Father's Education:* Over half of the fathers of Vice-Chancellors did not study beyond high school. 33.0% of them had eighth grade or less education. Only 20.5% had fathers with a Bachelor's or higher degree. In contrast, about 38% of Indian managers' fathers had a Bachelor's or higher degree. (Table 9).

Social Class

Social class status of a person defines not only his or her life style and influence in the community but also the individual's expectation and oppor-

Table 9

THE EDUCATION OF PARENTS OF VICE-CHANCELLORS

Educational Level	*Fathers* (%)	*Mothers* (%)	*Spouses* (%)	*Managers' Fathers* (%)
8th Class or Less	33·0	74·1	24·1	47·0
High School Diploma or More than 8th class	17·0	12·5	22·3	
Some College	18·8	0·9	14·3	13·0
Bachelor's Degree	11·6	1·8	10·7	19·3
Master's Degree	8·0	0·0	15·2	17·1
Doctorate	0·9	0·0	4·5	1·5[a]
Other	5·4	2·7	1·8	2·1[b]
No response	4·5	8·0	7·1	–

Source : *S. Jain*, Op.cit, *pp.* 59 *Table* 19

a. Includes all above master level education

b. Technical Diploma

tunities. Social class is determined not only by an individual's income but also by his occupation. In the case of India, caste may also influence the individual's influence in the community as well as his children's life opportunities. Thus, we consider occupation and income as primary factors and caste a secondary factor in determining an individual's social class.

Our earlier discussion of caste indicates that not a single Vice-Chancellor comes from low service scheduled castes or from scheduled tribes.[20] Thus, as far as caste is concerned, no respondent falls in a clearly low social class status. So we turn to parental income and occupation data, which we pool together, to develop a picture of the Vice-Chancellors' social class status.

Income and occupational data together show that about 19% had peasant/artisan fathers while 24% were from poor or near poor families. We expect the peasant/artisans class (which includes farm labourers) to be poor or near poor, but this data indicates that at least 5% of the respondents' fathers in other low level occupations earned poor or near poor income. This is not hard to understand, since a school teacher or a petty businessman or a chowkidar (lower level civil servants) in rural areas often did not earn any more than a peasant. Thus, while he may have a slightly higher occupational title, he would still be quite poor.

When middle or higher income levels are compared with higher level occupations, a nearly perfect match between the two is apparent. 47.8% of the respondents had fathers in higher level occupations and 48% of the respondents come from middle or higher level income families. Clearly, at the upper end of the social classes, income and occupation go hand in hand.

Table 10

OCCUPATION OF V.C'S. FATHER, GRANDFATHER AND WIFE'S FATHER (PER CENT)*

Occupation	*V C's father's* (*n*=107)	*V C's fathers' father* (*n*=94)	*V C's mothers' fathers* (*n*=87)	*V C's wife's fathers* (*n*=93)
Higher Civil Service	12·2	3·2	6·9	18·3
Medicine	1·9	4·3	2·3	5·4
Law	7·5	8·5	3·5	11·8
Other Learned Profession	4·7	0·0	1·1	2·2
Business Executives	0·9	0·0	0·0	1·1
College Professoriate	4·7	0·0	1·1	2·2
Large Landlord (Zamindar)	7·5	12·8	13·8	6·5
Large Business Owner	8·4	6·4	8·1	9·7
Small (Petty) Business Owner	0·9	3·2	0·0	5·4
Business Employee	0·9	0·0	1·1	0·0
Lower Civil Service	18·7	25·4	25·3	18·3
School Teacher	13·0	9·6	2·3	6·5
Farmer—Peasant	18·7	28·7	33·3	12·9
Others**	0·0	0·0	1·1	0·0

**Per cent may not add to* 100 *due to rounding*

***Politician*

Thus, a consideration of income and occupation together, shows that at the minimum, about 19% of the Vice-Chancellors come from below middle class family status. The rest, about 81% come from middle (lower and upper) and upper class families.

The social class background of both Indian managers and the IAS and all the other higher civil services of the government of India are similar to the Vice-Chancellors' social class background. Among all three, managerial, administrative and educational elites, about 81% come from middle or upper class background.

Educational Background

Education is at least as influential as social and family background in shaping an individual's world view, attitudes and values. Often these three influences complement and reinforce each other. Thus educational background forms an important segment of our profile of Vice-Chancellors.

We expected Vice-Chancellors to be highly educated, with most having earned advanced postgraduate degrees. We asked a number of questions, for example: What type of school, public or goverment, did the Vice-Chancellors attend? What was the highest degree earned? What major subjects did they study for their first degree, second degree? Where and from what type of institutions did they receive their higher education? How many had earned doctorates?

(1) *School Attended:* A majority of Vice-Chancellors attended government schools for their school education. Only 2.7% of them attended public schools. About 7% of them attended convent or other religious schools while about 34% attended private schools as Table 11 shows. Clearly few Vice-Chancellors went to "elite" schools for their elementary and secondary education.

Table 11

TYPE OF SCHOOL ATTENDED
(PER CENT)

Type of School	*V.C.* (*n*=112)	*IAS**	*IFS**
Public	2·7	5·6	26·5
Convent	5·4	10·7	20·5
Other Religious Order	1·8		
Private	33·9	87·7	53·0
Government/Local Body	56·3		

**Data for IAS and IFS are from V. Subramaniam,* Managerial Class of India, *p.* 76, *Table* 12.

Comparing Vice-Chancellors with Indian managers we find that 2.2% of the managers went to "public" school. This is about the same as Vice-Chancellors' 2.7%. However, many more managers (13.6 percent) had studied at mission schools "which enjoy a reputation for better than average standards of education and which constitute only a very small proportion of India's...high schools."[24] This is almost twice the percentage of Vice-Chancellors who studied in mission schools. The overwhelming majority of Vice-Chancellors (over 90 per cent) and Indian managers (84 per cent)[25] went to what may be called "average"[26] schools. However, managers in foreign sector corporations went to public and convent schools at about twice the rate of their private Indian sector counterparts.[27] Also, a much larger per cent of the administrative elite, members of the IAS and IFS, received their schooling in "elite" public or convent schools. Over one in six IAS officers and almost every other IFS officer was schooled in either a public or convent schools.[28]

(2) *Higher Education:* All Vice-Chancellors received at least a Bachelor's degree. Over half of them have earned doctorates. Over 40% received Master's degrees or postgraduate diplomas. As table 12 indicates, the differences between past and present Vice-Chancellors in the highest degrees received is notable. While none of present Vice-Chancellors has only a Bachelor's degree, over 15% of the past Vice-Chancellors had only a Bachelor's degree. While 68% of the present Vice-Chancellors have an earned doctorate, only

about 38% of the past Vice-Chancellors had. Clearly, the highest degree earned has risen over the years and the present Vice-Chancellors have a much higher level of formal education than former ones. This difference does not necessarily suggest a lower level of academic and intellectual achievement by the past Vice-Chancellors. It may be due primarily to the recent increase in offering of Ph.D. degrees and in the variety of fields in which they are now offered. In recent years the Ph.D. degree has replaced the Master's degree in a number of fields as a terminal degree.

Table 12

DEGREE RECEIVED
(PER CENT)

Degree received	*Past V.C.*	*Present V.C.*	*Total*
Less than Bachelors	0·00	0·00	0·00
Only Bachelors	15·40	0·00	8·90
Masters or P. G. Diploma	46·10	32·00	40·20
Doctorate (Ph.D.; D. Phil.; D. Litt.; D.Sc)	38·50	68·00	50·90

(3) *Subject Studied:* We asked our respondents to indicate the major subject they studied for each of their degrees. We grouped their responses into six major categories. Natural and life sciences, as well as professions based on these sciences (i.e. medicine, engineering and agricultural professions) are grouped in one category. Mathematics and statistics; Social sciences and social professions (e.g. social work); Business (accounting, business administration, etc); Law; and Humanities are the other five categories.

Natural Sciences, Social Sciences and Humanities we found to be the three most common fields of study. Over 47% received their first degree in natural sciences, over 23% in social sciences and over 14% in humanities. Over 84% studied one of these three fields.

Among Vice-Chancellors indicating their major field of study for a second degree, again over 84% studied in the same three fields.

Over a third of the Vice-Chancellors did not indicate any third degree. Among the remaining two thirds, almost 75% studied in the same three fields. There was a major difference in the per cent of Vice-Chancellors who studied law for their third degree: Over 18% took law.

The overwhelming number choosing natural sciences, social sciences and humanities versus the relatively small number educated in business administration, law or mathematics is clearly shown in Table 13. A close look at this table shows that a sizeable number studied "hard" science-based professions for their second and/or third degree. This is to be expected since a number of our respondents are heads of technological or agricultural universities. The heads of these specialized universities are understandably specialists themselves. A noticeable lack of business administration as a field of study indicates that Vice-Chancellors have little academic grounding in management. This may be partially due to the limited number of programs in business and accountancy at the university level when most of our respondents received their bachelor's degrees over two decades or more ago. Be that as it may, our data clearly shows that Vice-Chancellors studied mostly sciences, social sciences and humanities, all three traditional fields of study, with technical-professional studies dominating among Vice-Chancellors of technical and agricultural universities. A good number studied law as a follow up after their studies in the three dominant fields.

Table 13

MAJOR SUBJECT STUDIED BY VICE-CHANCELLORS
(PER CENT)*

Subject Studied	*1st Degree* (n=112)	*2nd Degree* (n=112)	*3rd Degree* (n=112)
Natural and Life Sci. & Professions	47·3	42·0	27·7
Nat'l Sci.	32·1	15·2	7·1
Life Sci.	3·6	6·3	6·3
Medical	3·6	4·5	1·8
Engineering	2·7	9·3	5·4
Agriculture	5·4	6·3	7·1
Social Sciences	23·2	22·3	12·5
Humanities	14·3	12·5	8·0
Math & Stat.	10·7	7·1	3·6
Law	0·9	4·5	11·6
Business & Accounting	3·6	1·4	0·0
None		9·0	36·6

**Percentages may not add up to* 100 *due to rounding.*

This distribution of fields of study for Vice-Chancellors is considerably different from that of Indian managers. Among the managers, engineering and technology was by far the most common field of study—for over 37% of them. Social sciences and humanities accounted for only about 13% of the managers,[29] but over 30% of the Vice-Chancellors. Table 14 shows the details on major fields of study of Indian managers.

(4) *Class Obtained:* Less than 28% of the Vice-Chancellors secured first class in their first degree, and even fewer, only 22% in the second degree. Even fewer, only about 11.5% got first class in the third degree. Roughly the same percentage as those getting first class got third class in their first, second and third degrees respectively. That is, about 28% got third class in the first degree, about 26% got third class in the second degree, and about

Table 14

MAJOR FIELDS OF STUDY OF INDIAN MANAGERS

Field of Study	*Public Sector*	*Foreign Sector*	*Indian Private Sector*	*Indian Managers (All)*
Engineering & Technology	56·6%	29·2%	40·0%	37·3%
Physical and Natural Sciences	19·4	25·9	20·3	22·4
Commerce and Accounting	4·1	14·5	8·3	10·4
Humanities	4·1	9·9	7·7	8·2
Social Sciences	4·6	4·9	4·6	4·7
Law	2·6	4·6	6·7	5·5
Business Administration	2·5	2·1	1·5	1·9
Other fields of study	2·0	1·4	2·3	1·9
Not classified*	4·1	7·5	8·6	7·7
Total	100·0	100·0	100·0	100·0
100%	196	799	987	1,982

**Those who had less than two years of college/or equivalent.*
Source : *S. Jain,* Indian Manager, *pp.* 29, *Table* 5.

13.5% got third class in their third degree. The others got second class or honors or did not respond to the question as Table 15 shows.

Table 15

CLASS OBTAINED BY VCs
(PER CENT)

Class	*First Degree* (*n* = 112)	*Second Degree* (*n* = 112)	*Third Degree* (*n* = 112)
First Class	27·7	22·3	11·6
Honors	8·0	9·8	15·2
Second Class	27·7	31·3	13·4
Third Class	27·7	25·9	13·4
No Response/None*	8·9	10·7	46·4

**In case of degree from foreign university no class is reported, and those responses are included here. A large number of third degrees are from foreign universities.*

Comparison of Vice-Chancellors' educational performance, as indicated in the class they obtained, with that of Indian managers and top level government administrators show that Vice-Chancellors' performance ranks below the top level administrators, and is comparable to the managers. Over 60% of the IAS and almost 47% of the IFS received first class or received degrees from foreign universities. Only 17.8 % of the IAS and 25.5 % of the IFS received either third or second class in their first degree. Table 16 shows class obtained by the managers and the IAS and IFS.

Table 16

CLASS OF FIRST DEGREE
(PER CENT)

Class	*IAS*	*IFS*	*Managers** (*n*=817)
Degree from Foreign University	4·7	3·50	5·15
Indian Uni., I class in the 1 Degree	41·2	34·75	20·30
I Class in the II Degree only	14·5	8·50	5·15
Hons. II Class	21·8	27·75	16·50
Other Classes (II and III)	17·8	25·50	39·00
Non-graduates	0·0	0·00	13·90

Source : *V. Subramaniam,* op.cit. *p.* 76, *Table* 12.
**Managers from Group II companies only. Group I companies in Subramaniam's studies are all foreign owned multinationals, with the exception of Tatas.*

While it is true that Indian universities traditionally gave very, very few first classes, especially in social sciences and huminities,[30] it is difficult to understand the very small percentage of honors second class. This was traditionally the class most bright students received. The fact that over 55 % of the Vice-Chancellors received their first or second degree in second or third class if concern. It indicates that over half of the men leading the major intellectual and academic institutions of the nation have themselves rather undistinguished, if not mediocre, academic performance records. If the class obtained is a fairly good indicator (and this may be open to debate) of overall intellectual ability, then the fact that the administrative elite (IAS and IFS) is far superior to the Vice-Chancellors as a group, may have many significant consequences for universities in India. It would certainly reduce the prestige and status accorded to the university, particularly vis-a-vis the administrative elite. This could not help but make universities' dealings with the government more problematic. University heads being no more distinguished in their academic performance than business managers does not bode well for the universities in the country. If the University head is expected to raise or maintain a high standard, then certainly he himself must first have obtained a first class education.

Career Pattern

We now have a good idea of what kind of family and social milieu these people grew up in, where they studied, what they studied and how well. We now know much about the initial advantages they started out in the world with. But, that is at best only half of the story. What they did after they started working, what "choices" they made as they moved from position to position are also important in explaining their "making it" to the top. After reaching the top, the Vice-Chancellor's career pattern and prior experience condition his behavior as a University leader.

How does one move up to the Vice-Chancellorship? Is there a succession of jobs that are most commonly held by would-be Vice-Chancellors? Is there a mapped route to the top? These are some of the questions that pop up after having considered the socio-economic and educational background of individuals who have made it to the top of the university hierarchy.

We asked our respondents to list all the positions they held since they began full-time work. We also asked them to indicate which was their last position prior to becoming a Vice-Chancellor. In addition, we collected data on the age at which they assumed Vice-Chancellorship, and years of tenure in office.

(1) *Age at Appointment:* On the average Vice-Chancellors assumed their position at the age of 55.5 years. Current Vice-Chancellors, on the average took office at the somewhat younger age of 52.2 years as compared to previous Vice-Chancellors whose age, on average, was 57.8 years when they assumed the office. As Table 17 shows, alomst 9% in office now were forty or younger when they became Vice-Chancellors. Not a single past Vice-Chancellor assumed the office so young. On the other hand, over a third of the previous Vice-Chancellors had assumed office when they were already over sixty while less than 7% of the present Vice-Chancellors were that old when they assumed office. Clearly, there is a tendency in recent years to appoint younger individuals.

Table 17

AGE AT WHICH VICE-CHANCELLORS ASSUMED OFFICE
(PER CENT)

Age	*Past V.C.*	*Present V.C.*	*All V.C.*
40 or below	0·0	8·5	3·6
41–45	1·5	8·5	4·5
46–50	13·9	19·2	16·1
51–55	18·5	29·8	23·2
56–60	30·8	27·7	29·5
62–65	29·2	4·3	18·8
Over 65	6·2	2·1	9·5
Average Age	57·8 yrs.	52·2 yrs.	55·5 yrs

(2) *Paths to Vice-Chancellorship:* The most likely career beginning is as a faculty member or researcher in an institution of higher learning. Almost two thirds began as a teacher-researcher in higher education. Three

quarters of the present Vice-Chancellors began as academicians as compared to sixty per cent of the past Vice-Chancellors. This would indicate an increasing practice of promotion through the academic hierarchy. Very few Vice-Chancellors began their careers in government or academic administration. Rarely did they begin in private management. From this academic beginning, they moved, rather rapidly, into administrative positons. More than 20% of them had moved into academic administrative work in their second job. Almost 36% of them had moved into administrative positions in their second job. Only about 45% of them remained in teaching and scholarly work as their second job. There was a three-fold increase in the number of future Vice-Chancellors holding academic administrative jobs as their second job from those holding them as their first job. Table 18 indicates that our respondents moved progressively away from teaching and research work and into administrative work as they moved from one job to the next.

Table 18

CAREER SEQUENCE FOR VICE CHANCELLORS
(PER CENT)

Occupation/ position	*First position*	*Second position*	*Third position*	*Fourth position*	*Fifth position*	*Position just prior to V.C. ship*
Govt. Admin (Educational)	1·8	2·7	8·9	7·1	7·1	8·9
Govt. Admin (Genl)	6·3	7·1	7·1	7·1	11·6	13·4
Govt. Admin (Tech/Agri)	1·8	4·5	2·7	4·5	5·4	4·5
Int'l Admin.	0·0	0·9	0·9	1·8	0·0	0·9
Univ/Research Admin.*	4·5	11·6	12·5	14·3	18·8	18·8
Academic Admin.**	2·7	8·9	17·0	17·9	14·3	25·9
Univ/College Faculty	56·2	36·6	32·1	17·0	7·1	8·9
Scientist/ Technologist	6·3	5·4	5·4	4·5	0·9	2·7
Scholar/Fellow	3·6	3·6	0·9	0·0	0·0	0·9
Private Management	0·9	2·7	0·0	1·8	0·0	2·6
Military	0·9	0·9	0·0	0·0	0·0	0·0
Politics	0·9	1·8	0·9	0·9	1·8	3·6
Judiciary	1·8	1·8	1·8	1·8	0·9	2·7
Law	2·7	1·8	1·8	1·8	0·0	0·0
School teachers	3·6	2·7	0·0	0·0	0·0	0·0
Others	2·7	1·8	2·7	4·5	1·8	3·6
No response	3·6	5·4	5·4	15·2	30·4	2·7

**Includes Vice and Pro Vice-Chancellorship; Registrarship; Comptrollership; Director and Joint Directorship of research organizations; and UGC offices.*

***Includes college principalship; Dept. Chairmanship and Deanship.*

In their third job, almost half of them were already engaged in administration and less than 40% were still teaching and researching. By the time they get to their fifth job, hardly any (one in twelve), was engaged in teaching or research. This pattern of beginning as a teacher-researcher and moving into administration, on the way to the top, is not unexpected. Neither is it unique to Indian university heads. In discussing paths to the presidency of Amercian universtities and colleges, two American scholars write, "...most presidencies in American colleges are now occupied by individuals who entered an academic career as a college teacher...The pattern is distinctly—and increasingly—promotion through the hierarchy of academic administration".[31]

As Table 19 shows, over 72% of the respondents were holding administrative jobs, in academia or government, just prior to assuming the office of Vice-Chancellor. Only 12.5% were holding teaching or research jobs just prior to becoming Vice-Chancellor. Only rarely does a Vice-Chancellor move into Vice-Chancellorship directly from the faculty without prior administrative experience. The most dominant pattern is promotion through the hierarchy of academic administration. This is even more true for the present Vice-Chancellors than for past ones. Increasingly it is moving up the academic hierarchy rather than moving in from the outside, (government), that characterizes the path to the top university position.

Table 19

TENURE IN OFFICE
(PER CENT)

Number of years	*Past V.C.*	*Present V.C.*	*All V.C.*
1 or less	4·5	30·0	15·0
Less than 3	18·5	53·2	33·0
3–5	52·3	34·0	44·6
6–10	26·2	10·6	19·6
11–15	1·5	2·1	1·8
Over 15	1·5	0·0	0·9
Average Tenure	4·71 yrs	3·02 yrs	4·0 yrs

It is important to take note of the role of government administrative experience. As Table 18 shows, less than one in ten of our respondents started their career in government administration. But over one in four was in a government administrative job just before assuming Vice-Chancellorship. Clearly many of our respondents started in academia then moved up into government bureaucracy before returning to academia as Vice-Chancellor. Thus, in India, government bureaucracy provides an important avenue for upward job movement in academia. This is in stark contrast to the career pattern of American college and university presidents; no more than 2% of whom held a government position (for an appreciable time) in their career.[32]

What are the implications of substantial numbers of government bureaucrats moving into the top leadership position of the universities? To discuss this question we need to look more closely at the types of government jobs the Vice-Chancellors held. As Table 18 shows, about a third of the government jobs the respondents held just before becoming Vice-Chancellors were in educational administration. They were primarily in state departments of education. The other two thirds were in general government administration or in technical and agricultural administration. As we know, all but a few universities are fully funded by state governments. Those few are central universities fully funded by the centre. In addition, the governing bodies, particularly the Senate and Syndicate of most universities have government bureaucrats as members. The State Department of Education deals with the universities in the state on a continuing basis. The university's budget and finances are primarily decided by the State Education and Finance Departments. Thus, directors of state Departments of Education and Finance have substantial influence on universities in the state. Many states have a separate directorate for higher education. The Director of Higher Education would deal with university matters in these states. In either case, these administrators usually have considerable experience in educational administration. In most cases they start their own careers as school or college teachers. They are no strangers to the educational milieu.

Almost half of the Vice-Chancellors who were government administrators just prior to assuming Vice-Chancellorship, held general administration positions. They have had little. if any, experience in dealing with or understanding the special nature and place of universities in the nation. Most likely they moved from department to department every two or three years. They have neither a vested interest nor a deep commitment to any governmental activity or program. Their commitment and loyalty is to "administration" in general. A large number of these administrators moving into the top positions of leadership in universities should be a cause for some concern. More than one in eight Vice-Chancellors came to his job from a generalist government administrator career background. These are not less bright or less capable individuals. They may even be brighter and better administrators. The concern is that they may view universities as little different from a large public corporation or a large government department. Their career is based on that premise, the assumption that administration is administration. An underestimating and undermining of the special character of the university may result if this philosophy of administration is practiced by the Vice-Chancellor.

About one in the eight of our Vice-Chancellors came to their job directly from a teaching or scholarly position as Table 18 shows. They are very likely to have had very little experience in administration of any kind, but are most likely to be highly respected teachers and scholars. They are almost opposite in their career pattern to the generalist administrators. The former have been at the centre of the university's unique purpose while the latter have been farthest from it. Each may present its special difficulty as a preparation for Vice-Chancellorship.

Among the miscellany of other positions Vice-Chancellors held prior to assuming office, politics and courts need to be mentioned. 3.6% of them held elected political office. They were members of Parliament, of state legislatures, or ministers in the state government. 2.7% of the Vice-Chancellors were judges of high courts or the Supreme Court prior to becoming Vice-Chancellors. Retired politicians and judges find Vice-Chancellorships acceptable retirement activity. A retired state chief minister or a supreme court justice may bring a certain prestige and influence to a university. But he may also bring partisan politics, It is evident that a main path, though, to chancellorship is through government or academic administration; a dominant career pattern is to begin in college or university teaching and then to move up into academic or government administration before assuming Vice-Chancellorship.

(3) *Tenure in Office:* Earlier we suggested that Vice-Chancellorship is the end of the career road for most of our respondents. It is the apex of their careers. It is also a hard job, in most cases also a thankless one. It is a job that, if taken seriously, demands an inexhaustible person. And the men who occupy the office are not very young when they assume office. How long do these men last in the office? How frequent is the turnover?

Table 20 shows that over 70% of the past Vice-Chancellors held the office for five years or less. 18.5% of them left office within 3 years. Only 3% of them had over 10 years of tenure in the job while 4.5% left the job by the end of their first year. The majority of them had three to five years on the job.

Table 20

ORGANIZATIONAL AFFILIATION
JUST PRIOR TO VICE-CHANCELLORSHIP

Organization	*All V.C.* (*n*=112) (*Per cent*)
College or University	39·3
Research Institute	5·4
Educational Trust	1·8
State and Local Govt.	32·1
Overseas Organization	8·0
Court	1·8
U.G.C.	1·8
No response	9·8

Among present Vice-Chancellors, over half have been in the job for less than three years and over 87% have been on the job for five years or less. Only 2% of the present Vice-Chancellors have been on the job for over ten years.

Vice-Chancellors generally stay on for a three to five-year term, with a fair number leaving the job even before completing three years. On the average past Vice-Chancellors had a 4.7 year tenure in office. The average present Vice-Chancellor has been in his present position for 3.0 years.

What might the causes and consequences of this pattern of tenure in office be for Vice-Chancellors? Is 4.7 years a long enough time for an individual to leave his mark on the university, to make the changes he wants or to set new directions? Or is the job so demanding that about three to five years is all that a person can put into it before feeling quite exhausted and spent? What are the consequences for the whole system of higher education in India? How does this relative inexperience of the many Vice-Chancellors affect the ability of universities to deal with government bureaucracies and with the legislature?

While our study was not designed to deal with these questions, our data does raise them. It may be that a three to five year tenure is quite adequate for a Vice-Chancellor to make an impact. But if this is not so, then it may be necessary to look deeper both into the reasons for such short tenures and high turnover and into appropriate policies to remedy the situation.

Table 21

VICE-CHANCELLORSHIP OF ANOTHER UNIVERSITY (S)
(PER CENT)

Number of Addl. Univ.	*Past V.C.*	*Present V.C.*	*All V.C.*
None	80·0	85·1	82·1
One	6·2	4·3	5·4
Two or more	10·8	6·4	8·9
No Response	3·1	4·3	3·6

(4) *Previous Vice-Chancellorships:* It may be suggested that if a Vice-Chancellor came to the position from a similar position in another university then his being relatively new would not substantially affect his ability to perform well since he would draw on the previous experience. To find out to what extent Vice-Chancellors have had previous similar experience we asked our respondents to indicate how many Vice-Chancellorships they have held. The results are presented in Table 21.

Over 85% of the present Vice-Chancellors have not been Vice-Chancellors before. A little over 4% have been Vice-Chancellor of one other university and 6.5% have been heads of two or more universities.

Among past Vice-Chancellors, 80% never headed more than one university. 6.2% were Vice-Chancellor of one other university, while 10.8% were Vice-Chancellors of three or more universities altogether.

Thus, very few (only about one in ten) present Vice-Chancellors came to their positions with any prior experience in Vice-Chancellorship. And if the experience of past Vice-Chancellors is any guide, over 80% of them will not be Vice-Chancellor of any other university. The data on tenure and previous experience as Vice-Chancellor indicate that Vice-Chancellorship is characterized by short tenure, high turnover and incumbents' lack of experience in a similar previous position.

Summary Profile

Our paper has been concerned with two central questions: Who are the Vice-Chancellors (their socio-economic and educational background)? and how do they get to the Vice-Chancellorship (their career path)?

The typical Vice-Chancellor is a middle aged married man. He was born and brought up in urban area. He comes from a white collar middle class family. He is most likely to be a high caste Hindu and least likely to be a Muslim or a low (scheduled) caste Hindu. He is not very different from a typical higher civil servant (IAS, IFS) or an Indian manager. He is a little more likely than a higher civil servant to be lower middle class and rural.

The educational background and academic achievement of Vice-Chancellor is average and undistinguished. He studied in a government school for his elementary and secondary education. He rarely attended public or convent schools.

He has at least a post graduate degree. He typically received all his degrees in second class from one of the older universities in India. He most likely studied sciences or humanities. He is most likely to have more higher education than the higher civil servant or manager but did not obtain as high a class as the higher civil servant.

The Vice-Chancellor is typically an academic-bureaucrat. He typically started his career in a college or university as a teacher or researcher. He moved to administrative positions in government or academia as his career progressed. He typically occupied an academic administration or government bureaucratic position just prior to becoming Vice-Chancellor.

Very rarely does a Vice-Chancellor come from private management. but over a quarter come to their job directly from a government bureaucracy. The overwhelming proportion of them have not previously held a Vice-Chancellorship. This is their first and in most instances, their last Vice-Chancellorship. Their tenure in office is not very long either, and the study points out a need for further study of the question of an ideal term of office.

It should also be profitable to study future Vice-Chancellors to determine whether present trends in their background, education and career patterns are continuing and what effects these characteristics are having on our highest educational institutions, the universities.

References

1. For a lucid description of the Indian university see Robert Gaudino. *The Indian University.* Bombay. Popular Prakashan, 1965.
2. V. Subramaniam, *Social Background of India's Administrators.* Ministry of Information and Broadcasting. Government of India, 1971.
3. Sagar Jain, *Indian Managers : His Social Origin and Career.* Bombay, Somaiya Publishing, 1971. V. Subramaniam, *Managerial Class of India,* New Delhi, All India Association, 1971.
4. Sagar Jain, *Op.cit.*
5. The paper is based on a larger study funded by the Indian Council of Social Science Research. Data for the study were collected in 1977-78. All the then present Vice-Chancellors and at least two (wherever available) past Vice-Chancellors for each university were included in the study. In all 254 (125 present and 129 past) Vice-Chancellors were sent an eleven page questionnaire. The study and its findings are fully reported in my report, *University Vice-Chancellors : Profiles of Leadership,* September, 1979. It is not our intention here to analyse the full implication of the data as that is done in the report. This paper is merely to present the basic profile.
6. For a good summary of literature on this subject see V. Subramaniam, "Representative Bureaucracy : A Reassessment," *American Political Science Review,* Vol. LXI, no. 4, Dec. 1967.
7. *Ibid.*
8. Census of India, 1961.
9. Sagar Jain, *Indian Manager : His Social Origin and Career.* Bombay: Somaiya Publications, 1971. Table 2. pp. 23. All data on Indian managers in this study are from Jain's study and from V. Subramaniam, *Managerial Class of India,* New Delhi, All India Management Association, 1971. All data on Indian Administrative Service are from V. Subramaniam.
10. See V. Subramaniam, *Op.cit.* pp. 14. Also, see Sagar Jain, *Op.cit.* pp. 69. There is some difference in findings between these two studies of Indian managers. However, both studies come to similar conclusions. There are some differences in magnitudes among categories but not sufficient to warrant different interpretation of data or different conclusions.
11. *Ibid,* pp. 14
12. Sagar Jain, *op, cit.* pp. 74.
13. Low college enrolment among Muslims may be partly due to low literacy among them. And generally low education among Muslims may be partly due to the descrimination against them and partly due to their rejection of "Western" education during the British raj.
14. Even though not a single vice chancellor who responded to our survey was from scheduled castes or tribes, it does not indicate that no past or present vice chancellor came from/scheduled caste or tribe. However, if our study is reasonably indicative of general situation among vice chancellors, then scheduled castes and tribes are greatly under-represented among vice chancellors.
15. Sagar Jain, *op. cit.* pp. 90-91. The data here is from the 1931 Census of India. This was the last census of India in which castes were enumerated. Ideally caste composition of vice-chancellors should be compared with the caste composition of adult male Hindu population in late 1930s, which was on the average the period when the vice-chancellors took their first jobs. Average age of vice chancellors is 62·9 years.
16. V. Subramaniam, *op. cit.* Educational factors such as nature of school or origin attended are also considered to have some influence.
17. Lloyd W. Warner, et al. *The American Federal Executive* New Haven, Connecticut : Yale University Press, 1963 and Lloyd W. Warner and James C. Abegglen, *Big Business Leaders in America.* New York : Harper and Brothers 1955.

18. The information on parental income applies to the time when the respondent began full time work. Since the average age of the respondents is 62·9 years and assuming that on the average, they began full time work at the age of 22, the parental income data given here is, on the average, for the year 1936-37.
19. This division of respondents into poor, lower middle, middle and upper middle income, and rich families is somewhat arbitrary. For a more precise division we would need data on cost of living and distribution of income in India in 1936. We would also need information on family size of the respondents since that would determine family income per person. We do not have data on any of these. However, an income of Rs. 100 or less per month would have put a family in the poor or near poor category even in 1936, while an income of Rs. 2,000 per month must have put a family in an extremely small, high income percentile of rich.
20. Michael Ferrari found similar trend away from farming occupations in his study of American college and university presidents. See, Michael Ferrari, *Profiles of American College Presidents.* MSU Business Studies, Michigan State University, 1970, pp. 55-58.
21. V. Subramaniam, *op. cit.* pp. 75.
22. V. Subramaniam, *op. cit.*, and S. Jain, op. cit.
23. Census of 1931, the last census of India in which castes were enumerated, divided the Hindus in the two broad caste categories: Interior and exterior. Untouchables or "scheduled" castes were classified as "exterior" and all other castes were classified as "interior", S. Jain, *op. cit.* pp. 90, footnote 6.
24. Sagar Jain, *op. cit.* p. 35.
25. *Ibid.*
26. *Ibid.*
27. *Ibid.*
28. V. Subramaniam, *op. cit.* p. 76.
29. Jain, *op. cit.* p. 29.
30. The U.G.C. figures for 1964 show 15·9% first classes among science graduates compared to 1·01% among the arts (includes both social sciences and humanities in Indian usage of this word "arts") graduates. Figures for first classes in social sciences and humanities for earlier years were in all likelihood even smaller. The figures for 1964 are quoted in V. Subramaniam, *op. cit.* p. 26, footnote 13.
31. Michael D. Cohen and James G. March, *Leadership and Ambiguity: The American College President,* New York : McGraw-Hill Book Co., 1974, p. 19.
32. M. Ferrar, *op. cit.* p. 81, table 26.

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Youth Unrest in Contemporary Indian University

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The emergence of youth phenomena and youth power has been felt all over the world in recent years. Youth is a crucial force in modern society and youth unrest is a structural and existential problem of our society which requires special attention and understanding. In the present paper, we examine the nature of youth unrest in India taking into considerations the social, economic and political factors which influence their behaviour.

Youth is a powerful section of any society. But the concept it is said, hard to define as it is being very comlex and its characteristics vary from time to time and society to society. The terms youth unrest and student unrest are more or less synonymous because they refer to the same phenomenon. A person from the age of adolescence to full maturity is known as a youth. As a collective terms, youth refers especially to young persons of high school and early college age. Persons aged 15 through 24 are usually considered the youth group by researchers dealing with census data. The national youth administration considered persons aged 16 through 25 age youth eligible for assistance. Youth in a sociological sense is not merely a chronological stage of life, but rather socio-culturally defined age-category in status (socio-cultural definition) of youth is a matter of "recognition" by society in accordance to its values and forms (Jain: 1974).

Youth represent an unusually large proportion of the world population at present and will continue to do so far the reminder of the twentieth century. According to a United Nations forecast made in 1966 the proportion of adolescents and young adults comprised 67 per cent of the global population in 1960 but will amount to 76 per cent by the year 2000. In any society, greater the proportion of young people, the greater is the likelyhood of cultural and political change. As such youths are a potent political force with the emergence and intesification of the "Youth Phenomenon" after second world war, a plethora of sociological and Psychological studies concerning its every aspect also appeared in the west. Consequently, in many developed countries, the sociology of youth is a well-established sub-discipline. The sociology of youth in India is still in its infacy. Only a few empirical studies have been done and they too by no means are comprehensive.

There is no main theory today which claim to provide an explanation of the nature of youth and their unrest. Sushila Singhal (1977: 12-13) did content-analysis for the explanations of student unrest in Indian universities and colleges. She described that student unrest centered on one or more of the following hypotheses: social psychological distance between the teacher and the student (Gaudino: 1965, Singhvi: 1972); the changing role of the intellectual in the post-independence era (Altbach: 1968; Ross: 1968); the erosion of the hierarchal structure of the society (Weiner: 1962; Altbach: 1969); the vaccum in the sex-life of the student (Dibona: 1969; Cormack: 1962); the hang over of the national movement (Altbach: 1969); the continuation of the traditional past (Shils: 1968: Rudolph: 1965); the exploitation of students by political parties (Wadia: 1972) and teacher-politicians (Biyani: 1968; Eakin: 1972); the generation gap (Srinivas: 1972; Kashyap: 1972); the economic uncertainity and the academic failure (Rao: 1963); the socio-economic, political and psychological factor (Dibona: 1967; Singh: 1972; Bhattacharya: 1972); the examination system (Sen: 1971; UGC Report: 1960 and 1962); and the structural inadequacies of the system (BHU disturbances 1966).

An overview of the literature on the sociology of youth suggests that it is basically an interdisciplinary subject and offers many significant areas of research for sociologists, psychologists, educationists, political scientists, demographers, anthropologists, philosophers and even physiologists and physicians. Only by coordinated efforts of various experts the multidimentional youth phenomenon can fully be explored. It is not peculiar to India alone. It exists in a number of countries. Therefore, different approaches are made to understand the causes of youth unrest, the most burning problem of today.

The psychological fermentation taking place under a variety of increasing strains, the crisis in the inner world of beliefs and convictions, and the disintegration of stable system of values have all combined in creating adolescent new mentality which perceives the realities of social life in an entirely different framework (Siddiqui: 1974). The education system has been considered as one of the most important factors in causing student unrest. The education system has been considered as defective and faulty. The educational and social fabrics as a whole are preameated with discontent, dissatisfaction and unrest (Banerji: 1974). The emergence of the youth entity is due to (i) fundamental demographic increase and (ii) social changes which have been taking place in recent years due to scientific and technological revolution (Joshi: 1974). It is not, however, this simple demographic fact but the "Youth Phenomenon" to use the summary terms includes youth politics and uprisings, youth behaviour and culture characterized by non-confirmism, alienation, bohemianism, drug-dependency, sexual freedom, disengagement from family responsibility etc. (Jain: 1974).

Youth unrest could be understood in two ways: (1) as a tool of structural analysis; and (2) as an ideology. In the first case, students have been instrumental in various kinds of cultural revivals. In the new nations of Asia, Africa and Latin America, students and youth are often instrumental in political, social, and cultural development. Students have provided leadership to national liberation movements, political parties, and on the more mundane level, labour organizations and cultural groups. Not only have the leaders of new states frequently come from student ranks, but the ideological base of many of the new societies has been influenced by student and youth movements. It is also necessary to distinguish between the two distinct patterns of youth activity which are oriented to the "norm" and the "value", (Smelser: 1963). The value oriented activity concerned with basic changes in society and it usually has a strong ideological basis, and often a highly committed leadership. The "norm" oriented student movement is generally concerned with smaller, more localized issues, often directly connected with the campus. Thus student participation on a revolutionary struggle in society, such as in a nationalist movement in a developing country, in a value oriented movement(while a student agitation over an examination or over campus living conditions would be a norm oriented movement. There are often elements of both orientations in a massive student demonstrations, and one type of protest can trigger another. Thus, it is not always easy to distinguish analytically between these two categories. Nevertheless, they do provide a basis for analysis.

Youth Culture: Ideology and Conflict

Traditional India, according to some observers, was a "land without youth" since there was no independent youth culture which has characterized western nations. Young people went directly from an extremely permissive childhood to the religious, social, and economic responsibilities of adulthood with no intermediate steps. This situation has changed somewhat with increasing numbers of young people in India attending schools and colleges, marrying much later, and thereby forming a kind of peer group culture similar to that found in the West. The Indian youth culture remains to be examined thoroughly by social scientists, but some generalizations can be made.

The modern youth has developed a set of norms and behaviour pattern. The common traits have emerged due to the mass communication system. The modern youth has been innovating tendencies which find themselves in contradiction with existing social system. They have a tendency of resigning flight from social norms and values. The youths have attracted the global attention through symbolizing their behaviour and actions. The youth is irresponsible, rebel and hedonistic according to Parsons. But youths have developed a culture of their own, autonomous and different from the offered by parents, teachers and priests. The youth have unquestioned loyality towards authority. They are not committed to adult values and roles. But they are not rebellious against the parents, on whom they are economically dependent (Joshi: 1974). The new values and norms and pattern of behaviour have created a culture of youth. The culture has emerged due to democratic socialization of child, lack of opportunity for the increasing aspirations of youths, and mass communication. The identification of power of youth has given an important place to youth in society.

Researchers in the area of youth cluture and youth politics involves ideological issues. The main issue has been whether youth phenomenon is "progressive" or "conservative". Conflicting views have been expressed on the issue. Some two decades back Kingsley Davis and Talcott Parsons, for example, described youth culture as largely "irresponsible, impulsive and anti-adult." On the contrary, most of researchers these days no longer accept such a conception of youth culture. They see in youth phenomenon a wider meaning and significant for social change. The student leaders possess radical ideologies. Most of the student leaders believe in socialism. A considerable number of them believe in democratic ideals of 'free society'. They regard the present political leadership of the country is corrupt and insufficient. Consequently, they stand for radical changes in social-structure (Tewari : 1974).

In many countries, the students only introduced radical politics. In many Asian societies students revolted against racialism, religious fanaticism, worn out traditions and traditional social structures. Ideologial comitment of the youth is more intense. They have no fixed context and rigidities in thinking. So they can easily give themselves to any cause. Altbach has pointed out that "young people around the world take professed aims of society more seriously than do their elders. Compromise, corruption and rhetoric do not often find favour among young people and particularly among university students who have been taught to take moral values and social responsibilities seriously."

The student unrest, which is mostly an act of juvenile delinquency in India especially, is never attacked on scientific lines (Trivedi : 1972: 206). Never a study has been taken to see whether the disturbance raised is because of college youth or non-college youths. The agitation is normally raised by young colts accepted as student leaders. The first and last step on the part of the students is also agitation. The authorities normally are not used to pay attention things unless they are taken to the level of agitation. Therefore, the student unrest is quite natural in the existing structural situation.

Youth Unrest: A Conflict of Generations

At the root of the problem of youth unrest is a conflict between the old and the young generations. The conflict has existed from the earliest times of the emergence of life on earth. It lives on among animals and among men.

Generations are like organism, All history is a record of the conflict of generations. Every Generation has its distinct purpose and destiny. The old want the young to behave in set grooves and to head their counsels of what they regard as their rich experience. The youth wants to feel independent, to throw of the yoke of the feeling of having been once under tutelage. The elder generation is not prepared easily to concede his demand for the recognition of equality of generatons. This makes the transition painful and provokes greater conflicts.

In a sense, youth unrest is an inevitable precondition for human progress. An average modern youth in India, unfortunately, is not a rebel. He is a frustrated nihilist. Not only has he lost all faith in the sincerety of the elder generation to look after his interests, he has no faith in anything, not even in his generation or in himself. He hates the existing order but feels helpless to upset it and to build it anew. He seems to accept the inevitability of the existing order and looks for a place of security and significance for himself within that order and not finding one, he gets frustrated.

Young people face social problems. The psychological and physiological problems of adolescence and of adjustment to new sociological roles in society are peculariarly felt by young people. The idealism of youth and particularly of students, often leads to concern for social problems, and to an interest in ideological politics. Student movements in India have played an important role in Indian political life, and on the campus. They trained a generation of nationalist leaders and gave ideological sophistication to many who later went into politics. The movement no longer plays this role, although, the tradition of activisim has not entirely disappeared, and may re-emerge if conditions in society seem favourable. For the present, student unrest is a reflection of deep frustration and worsening conditions on the campus.

The Indian youth have attracted the attention of social scientists both Indian and foreign as they became a political problem in the decade of 1960's. The student unrest which swept northern India in 1966 is typical of the kinds of issues which have stimulated such agitation since 1947. It is difficult to discern one key cause for the 1966 agitation, for in most instances it was local grievances which stimulated demonstrations or protest (Altbach: 1968: 51–64).

The student protest has become ubiquitious as the wave of contemporary student insurgency can be smelt in affluent and non-affluent societies. Therefore, students have now made their impact in every part of the world—Asia, Africa, Latin America, Europe and USA. However, it is noticeable that they have played their most striking role in the advanced industrial countries, whether capitalist or socialist. The student of India today is in profound state of unrest and disquiet, and disturbances of various sorts in the academic life have become common phenomena. Student unrest has recently expressed in various terms in various perspectives. Its expressions are sometimes quite bewildering and sometimes frustrating its nature, intensity and purpose varies from situation to situation.

The recent wave of student unrest in various parts of the country is a cause of serious concern, especially when student agitation increasingly taking a violent turn resulting in disruption of ordered life, destruction of public property and often grievious injury to the police, the students themselves and in many cases to innocent students. Such violence can certainly not to be condoned, as it strikes at the very root of our democratic polity. But mere denunciation is not enough, and it is necessary to look deep into the causes of this frustration and indiscipline in our student community.

There are various factors that contribute towards student indiscipline, such as the rising cost of living, the inadequate teaching facilities, the generally low standards of teaching, the unimaginativeness, corruption and sheer inefficiency that are often encountered in education administration. Student unrest orginates from various sources and takes many forms sustaining itself in a number of ways. It has a number of dimensions. As a matter of fact student unrest is perhaps unique in every context as the nature of interaction and group participation would vary from situation to situation. Bhattacharya: (1972: 194) mentioned the symptoms in general: (1) Inadequate frustration tolerance, (2) growing confusion and insecurity, (3) scepticism against the older generation and old values, and (4) increasing impulsiveness for any change. A recent report on student unrest stated that the four main causes for student unrest are "(1)Lack of proper academic atmosphere, (2) absence of respect for authority—parental, educational and governmental, (3) ideological frustration, and, (4) political interferences" (Altbach: 1970). These, then, are some of the variables which determine the nature of youth unrest.

Now, we shall analyse the inferences which have been drawn from different empirical studies of student unrest. Sociologists in India have shown relatively little interest in evaluating the role of differental aspirations of students.

Some observers of student protest have especially stressed the role of what are called "Professional" student leaders. As Lipset observes: "The greater the number of years the student spends at the University, the greater the liklihood of student political activity" (1967: 24). This is true of many Latin American and Asian countries.

In his study of student leadership in Lucknow, Syed (1975) presents the result of a survey of 220 student leaders of Lucknow University. The analysis of data places heavy emphasis on social background of professional student leaders. Therefore, he analyes the personal attributes of age, religion and caste, rural-urban, residence, marital status. Syed finds that the majority of students are young persons, the student leadership all over the world is, in the vary nature of things, in the hands of youth; and student protest is youth protest. Most students in India are unmarried. Evidently, single student leaders can devote more time to agitation and politics that their married counterparts. The religious composition to student leadership roughly conformed to the general population. Many observers and analysis of the University scene in general and the student community in particular have highlighted the impact of caste on University affairs and on student politics in India (Harrison, 1960, Ross 1969, Dibona, 1969, etc.). The student leadership, to be precise, is monopolized by the upper caste Hindus, chiefly the Brahmins. There are two reasons for this, namely, the student power structure, like the wider power structure, still continues to be highly elitist, and, secondly, upper caste students are economically and numerically dominant.

In their study of student unrest in Panjab Agricultural University, Deb and Agarwal portrary the students unrest as the student leaders perceive them. They indicated that the active leaders came mainly from high socio-economic strata and from rural areas of the state. A large number of the leaders hailed from families with high level of education. In many cases, the parents hardly envisaged any interest in the educational progress of their wards. The pattern of home discipline was loose for an over-whelming majority of the respondents. Surprisingly, most of the leaders played their role in the campus with the approval of their parents. The leaders also registered their resentment against the hardened attitude of the authorities and expressed a sort of rebelling mood against it (Deb and Agarwal, 1979: 28).

It is noted that the most important contributing to student indiscipline was the problem of unemployment and insecure future that hangs like a black shadow over the students when they would complete their studies. The University makes or unmakes their career. They want all sorts of possible and impossible changes in administration of university. The important cause was that the genuine demands of students were not accepted by the authorities. The reaction of authorities has been notorious. When their attempts at cooperation are rejected, they vigorously deploy the armoury of repression for such purposes: special police, para-military units, guard dogs, water cannon, tear gas, shock granades, etc. The exact balance of force and fraud in each country varies with the strength of the student movement, (Blackburn and Cockburn: 1970: 7-8). Consequently, things are moving in the same vein of the hierarchical system of the Indian society. The hierarchy of rank is also sustained by an authoritarian spirit. Therefore, there is no change in the defective examination system, especially large number of tests and make up examinations which also contributed to the student out-burst. Another indirect cause is the increasing cost of education due to the price hike. It is also found that teachers give lectures without involving studies. They do not take personal interest in the career of students. They do not command moral influence over the students today. It is also observed that the lack of personal contact between teachers and students as a cause of frustration.

Conclusion

In the preceding pages, we have analysed the nature of youth unrest in the contemporary situation of Indian Society. The nature of youth unrest has taken different directions in recent years. Increasingly, they are being involved in the day today socio-economic problems including the employment, educational reforms and so on. Frustration and alienation are being felt among themselves because of the discripancies in their aspirations and slow rate of fulfilment by the society. Moreover, this is reinforced by the generation gap between youth and rest of the society.

University students are a particularly important element of the youth population of a country. Student unrest is a problem of grave concern to everybody. In India, students are not only avoiding the class-rooms, but also indulging in violent and distructive activities. The Indian student does not function in a vaccum, and he is very much a part of the society and subject to the pressures which are evident in Indian society, despite recent impressive gains, is still very much a "society of scarcity", (Weiner: 1962). University students must worry about suitable employment after graduation and about the conditions of study while in college and university. The students start agitation for expressing their frustration of grievances and want to catch the attention of the authorities or Government. Authority crisis is due to political, economic and social factors. The craze for short-cuts is growing among youths, with no jobs, aspirations and ambitions failed. Youths are doomed in the darkness of uncertainty. Multiplicity of factors leads to uncontrolled and unguided behaviour of our youths.

About a peaceful campus the authority should adopt an attitude of sympathetic understanding of the problems and take urgent steps before grievences turn into demands or before situation slips out of control. The political interferences should be minimized as far as possible. No politcal party or its nominee should use the University campus as its base to serve its political gain. Increasing attention should be paid by the authority in order to solve the day to day problem of the students in order to maintain the conducive academic atmosphere. After all the social structure has to absorb smoothly by youth in productive activities in order to reduce the discontentment among the youth.

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China's Immediate Future : Renewed Cultural Borrowing*

R.F. PRICE

A history of Chinese education during the past one hundred years and more must largely concern itself with the effects of cultural borrowing. Had the results been beneficial one might almost have reckoned that Europe was paying, directly, and indirectly through Japan and the USA, its debts from the past when she herself had learnt so much from China. The shape of China's school system was consciously borrowed from the USA: six years of primary school followed by three years each of junior, then senior high school. A mixed British and American tertiary school pattern was replaced by the Soviet model in the early fifties: a few universities and a host of monotechnical institutes. Within the schools organisation and curriculum was borrowed in succession from Japan, Europe, the USA, and then Europe again. The USSR, like Japan before, was seen as the distiller, this time of socialist wisdom.

Ironically, during the Great Proletarian Cultural Revolution (GPCR) which broke out in 1966 and included a considerable amount of hostility to things foreign, the major improvements in education proposed had all featured previously abroad. While their foreign origin was clearly largely unrecognised in China, names like Rousseau, Dewey, Krupskaya or Shul'gin surely flitted through the minds of foreign observers of this revolution to "change the soul" and relate education to the world of work.

In the years following the 11th. Party Congress of August, 1977, the attempts to implement the new economic policy of "four modernisations" (agriculture, industry, science and technology, and national defence) have again brought conscious borrowing to the fore and flowers of cultural contact have been blooming on an unprecedented scale. While the main emphasis has been on raising standards in science and technology hardly a field of cultural endeavour has been neglected. Whether in the drafting of new laws, handling paleontological specimens, or producing an English language daily newspaper, foreign experience is being studied in ways unthinkable only a few years ago. Not surprisingly there remain hesitations and not all things foreign, nor all foreigners wishing to poke and probe into things Chinese are equally welcome. But the scope and character of the changes make it important to attempt some assessment.

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Who is Borrowing What?

Taking the "what?" first, it is clear that those who occupy the major decision-making positions in China still think like their predecessors near the turn of the century. Slightly reinterpreted perhaps, their slogan could still be the words of Zhang Zhidong (1898): *Zhongxue wei ti, xixue wei yong*, (Chinese learning for the fundamental principles; western learning for practical application). Whether sending students and scholars abroad or inviting teachers to work in China the emphasis is on skills of language and on science and technology.

In the major capitalist countries there has been considerable discussion of the value-laden nature of technology and science. But I can detect no such concern in China. In the propaganda supporting modernisation science is assumed to be neutral and even what distinguishes socialism has become hard to discern. Made cynical by sharp changes of policy and repudiation of past positions, the intelligentsia appear to be left without a theoretical basis for a critical approach to the foreign experience which many of them are being exposed to. They have no well-founded standard by which to measure what they might learn from abroad.

It is true that the Chinese Communist Party is expressing concern about the moral-political education of the young, and about the low level of political education among many Party and government leaders. But the criteria on which this concern is based gives one little hope that it will result in the spread of understanding of a kind required for this problem. (*China aktuell*, Mai 1982. p. 255; *Honggi*, 9. 1982, pp. 39-41). Nor, one must remember, is it only a question of understanding, for much borrowing will be unconscious and imperceptible—which is all the more reason for the Communist Party to take it seriously and bring the issues out into the open in an all-sided way.

Turning to "who" is doing the borrowing, it is possible to be rather more exact. Until the current census figures have been analysed it will not be easy to put a figure on the size of the population directly affected. But clearly three overlapping groups are the most significant. These are the 52,96,000 scientific and technical personnel reported for 1980 by the State Statistical Bureau (*Guangming ribao*. 30 April, 1981, p. 3), the 3,178,000 graduates of tertiary schools between 1949-80 and the 247,000 teachers in tertiary schools (*Education in China*, pp. 27-30). It is members of these groups who in the main will be chosen to go abroad to study and who will be working alongside foreigners in China itself. They will also be involved in translating the foreign experience for transmission to wider groups, whether literally by translation of foreign writings into Chinese, or such ways as adopting foreign methods of performing some task. The permutations are endless and the tracing of influence elusive. In addition, other groups are affected. Many with less than tertiary qualifications will listen to foreign broadcasts, whether to improve their language ability or from desire to learn more than that. Many others will go abroad as workers or work alongside foreigners in the new projects involving foreigners in China.

While it is clear that efforts continue to be made to control the process of contact it is not clear that these are the result of any well thought out plan for borrowing. Moreover, with the devolution of responsibility for initiating contacts the execution of any such plan would become increasingly difficult. Control of the employment of foreigners in China has devolved from the Foreign Experts Bureau of the State Council, now concerned only with longer-term appointments, to the Foreign Specialists Division of the Foreign Affairs Department of the Ministry of Education, and even below them to individual tertiary education institutions and research bodies. The Academy of Sciences, the Academy of Social Sciences and various professional societies (*China Exchange Newsletter,* April, 1979, pp. 4-6) also increasingly make direct contacts with individuals and groups abroad, and invite visitors to China. In the sphere of business, of industry and agriculture, the bodies involved range widely from the Ministries in Beijing to individual farms. It is not clear at present whether there is a pattern of initiative, but the range of contact seems dependent on the authority of the inviting organ. (Nylan, p. 128). Difficulties still occur because vertical chains of administration normally preclude contact at the base level, e.g. contact with Muslims (administered as a nationality) was difficult for someone visiting under religious auspices!

The Lenders: Cultural Imperialism?

This is not the place to argue the case for imperialism, cultural or otherwise. It is a complex and controversial concept still insufficiently examined, especially as to the role of conscious intent and the unintended working out of the global system. Some insight into the former, the "conspiratorial" aspects of imperialism, appear in such books as *The imperial brain trust* by Shoup and Minter. They show the connection between the National Committee on U.S.—China Relations and the Council on Foreign Relations (pp. 210-11), and argue that the latter has, since its foundation after the first world war, increasingly represented the interests of the United States, "corporate upper class" (p. 6) in formulating successive government foreign policies. While it is not fashionable to express these corporate interests openly these days they are clearly read between the lines of many speeches and writings.

Education in the broad sense fits into the picture in promoting the "shared understanding of the central issues involved" about which Brzezinski wrote in connection with the influential Trilateral Commission (Shoup and Minter p. 268). But while Brzezinski was thinking about understanding between the leaders of the metropolitan nations what is pertinent to questions of cultural borrowing in China has been more clearly stated elsewhere. The radical North American Congress on Latin America, talking about reforms in Latin American universities commented:

> Thus, foreign corporations are assured of well-trained, upwardly mobile and ideologically compatible elites and technicians who hope to use foreign interests to advance their own careers, and who do not see their interests as inherently conflicting with those of foreign investors. (cited Carnoy, p. 337, n. 25).

Official statements by such bodies as the British Council, while naturally ignoring questions of imperialism, make plain the interest which they believe themselves to be serving. Sir John Llewellyn, writing in the British Council Report for 1978-79, cited the August, 1978, White Paper on Overseas Representation as guiding the work of the Council. British foreign policy was given as: safeguarding security; promoting prosperity; upholding and extending basic values and freedoms of our democracy; and honouring commitments and obligations contributing to the achievement of these by providing assistance to developing countries. (*Council Report*. p. 5). Translating these into specifically British Council terms Sir John Llewellyn stressed that:

> We are not do-gooders. We are not disinterested.

Rather, he saw the Council's task as

> creating a climate of opinion favourable to Britain's long-term interests.

More recently Jocelyn Chey, writing in *The Australian Journal of Chinese Affairs* on the work of the Australia-China Council also commented that it is not an aid organisation, and must bear Australian interests in mind". That interest she earlier identified as trade and an undefined "political relationship" (p.137) and "more reciprocal advantages for Australians who want to visit China, for study or for professional reasons" (p. 140).

It remains for critics to demonstrate (a) the imperialist nature of these interests and potential borrowings by China; and (b) any conflicts between the interests of investment, trade and cultural exchanges and those of what might be termed the non-corporate middle and lower classes of the metropolitical countries, i.e. within the lender countries themselves.

When one turns from the sponsoring organisations to the personnel involved in cultural exchanges at the field level one is immediately struck by the great variety, at least on the non-Chinese side. Those Chinese travelling aboard are probably a more uniform group, though these range from the pre-Liberation foreign-trained intellectual of upper class background to young members of the intelligentsia who owe their position to the post-Liberation school system. Nor are they apparently uniform in their political ideas, other than having a sense of Chinese patriotism. Foreigners working in China range from business representatives, government officials, technical experts, to teachers and students. In their attitude to China they range from a much diminished group of people for whom the Chinese political system is seen as utopia to the openly critical and hostile. A majority fall into what might be termed the critically sympathetic, for it seems that China continues to exert a fascination on those who visit her, from whatever walk of life they come.

I now propose to examine specific aspects of the cultural interchange, pointing out what we know and might like to know if a proper assessment were to be made.

Which Countries?

The role of English as the major international language and the dominant economic and political role of the USA in world affairs dictates the pattern of cultural interchange. In 1979 The New China News Agency reported that of the 2,230 Chinese studying in 33 countries 500 were in the USA, 300 in Great Britain, some 200 in France and the Federal Republic of Germany and 100 in Japan. In percentage terms that is 22.4 per cent in the USA, 13.5 per cent in Britain, or 35.9 per cent in the two major English speaking countries. Other countries mentioned in the report were Australia, Belgium, Canada, Denmark, Italy, The People's Republic of Korea, Kuwait, the Netherlands, New Zealand, Norway, Rumania, Sweden, Switzerland and Yugoslavia. (*China aktuell*, November, 1979, p. 1188).

The USSR, where so many thousands of Chinese studied during the nineteen fifties, has not been a venue since the early sixties, though there are rumours that it may soon again be one. It is interesting to note a continued interest in things Soviet among academics. In November, 1979, a group of 12 Chinese from the Chinese Academy of Social Sciences, the Beijing Institute of International Studies and the Beijing Institute on the Soviet Union and Eastern Europe paid a visit to the United States. They held meetings and seminars at Columbia University's Russian Institute, the Russian Research Institute at Harvard University, the University of California at Berkely, Stanford University, the RAND Corporation and the University of California at Los Angeles. In January, 1980, Professor Marshall Goldman of Harvard University had talks with several of the delegation while visiting Beijing and lectured at the Institutes of World Politics and World Economy of the Academy of Social Sciences and at Beijing University. His topics were: Soviet petroleum; US-Soviet relations in the wake of the Afghanistan invasion; and the Soviet economy in the year 2000. (*China Exchange News*, February., 1980, pp. 17-8).

On another level continued interest in the Soviet Union is expressed by the publication of translations of books by Soviet educators. Among those I have noted on visits in 1981 and 1982 were: V.A. Sukhomlinsky, *Have faith in man*, Moscow, 1960; Jiaoyu Kexue Chubanshe (Education and Scientific Press), 50,000 in 1981; L.V. Zankov, *Education and development*, Moscow, 1975; Wenhua Jiaoyu Chubanshe (Culture and Education Press), Beijing, 20,000 copies, 1980; V.I. Yadeshko and F.A. Sokhina (eds.), *Preschool pedagogy*, Moscow, 1978, Renmin Jiaoyu Chubanshe (People's Education Press), Beijing, 20,000 copies in 1981 and 1982. During a lecture on educational theory to students of a provincial teachers university which I attended, brief mention was made of the ideas of both Zankov and Sukhomlinsky, (1981). But I have neither heard nor read critical comment on these ideas and have no idea how they are presented or received.

Chinese Abroad

Since the new policy of sending academics abroad began in 1978, up to the end of September, 1980, altogether 5,192 scientists and students were sent to 44 different countries, 1,835 of them to the USA alone. (*China aktuell*, November, 1980, p. 942). These were sent officially and figures do not include those who went privately during the same period. The *China Daily* (17, August 1982, p. 1) reported that by the end of June, 1982, 3,500 students had returned to China, one hundred of them with Ph.D.s. The same report gave a figure of more than 12,000 "undergraduates, post-graduates and visiting scholars" as having been abroad in 54 countries since 1978. A more detailed report by the New China News Agency on 14 November 1981 mentioned a figure of 6,709 students sent to 52 countries by the Ministry of Education since 1976. (*China aktuell*, November, 1981, pp. 717-18). Eighty per cent of these studied engineering and the natural sciences. In addition the Chinese Academy of Sciences sent more than a thousand young scientists abroad. Their fields included Agronomy, Animal Husbandary, Light Industry, Management, Energy and Law. In the previous two years more than 400 Chinese had attended more than 200 seminars or conferences abroad. In addition some 50 Chinese tertiary institutions had concluded some form of relationship with 80 tertiary institutions in the USA. As well as students going abroad some 120 Chinese professors and university lecturers had taught for short periods abroad while a further 40 had been abroad for short lecture tours.

While the numbers of Chinese studying in Australia has naturally been less spectacular it would seem that it has not done badly in qualitative terms. Students first arrived under the new official exchange in 1974 and by 1981 totalled 48 undergraduates and post-graduates. On 8 January 1981 seven of these students graduated with Master of Arts at Sydney University, six of them in literature and one in linguistics. Their success was followed in 1982 when a further four students obtained Masters in Education at La Trobe University in Melbourne. Their studies had included linguistics and literature. A further four Chinese obtained Diplomas in the Humanities at La Trobe University after taking courses in such fields as International Affairs, American History and Economics.

Any thorough assessment of what Chinese students and others learn while abroad would have to take into account much more than the courses of study and other formal learning situations to which they are exposed. Judging from limited observation of the situation in Australia it would seem that contact is limited to well-to-do middle classes, mainly academics, on the one hand, and members of the Australia-China Society on the other—an overlapping group, but with rather different political viewpoints. Some of us might think this is an unsettling and at the same time somewhat unchallenging political experience, falling far short of the education required to assist students to understand the world.

Foreign Teachers in China

Until the post-1978 period it was rare for foreign teachers to teach anything other than their native languages. Recruitment was, and remains dominated by recommendation, often current teachers putting the Chinese in touch with their successors. While the Chinese authorities have become more sensitive to qualifications than they were in the sixties and advertisements even include such phrases as:

> preference will be given to those teachers who have some ESL training (*Australia-China Newsletter*. March, 1982, p. 8).

this does little to ensure the results are satisfactory. The difference in teaching methods used in China and those used abroad where modern language teaching methods have been applied is so great that those qualified in the latter are often psychologically unprepared to cope with the difficulties of adjustment. Those who over the years have attempted to introduce more modern methods, and this began at least with those of us who taught there in the mid-sixties (cf. Price. 1970, pp. 172-90), appear to have run up against both theoretical and organisational barriers, Students and teachers alike, while paying lip-service to current slogans about "speaking first..." or "communication", return in the end to methods of rote learning, grammar and translation. In spite of promising signs in 1965 at such places as the First Foreign Languages Institute in Beijing it would seem that the only change which can be claimed today is the uncritical admission of foreign materials and official support for hardware like language laboratories whose value, compared with the use of individual student cassette tape recorders, is more than doubtful.

One positive change which is probably at least partly the result of foreign contact is the expressed dissatisfaction with the typical Institute English course, currently four years of language study. John Deeney, in his report on "The state of American history and literature studies in the PRC", writes of dissatisfaction in both the Shanghai and Xi'an Foreign Languages Institute, and desire there to broaden studies in the English Departments to include such subjects as the politics, economics, sociology "and even anthropology" of the English-speaking countries. (Deeney, pp. 36-7 and 47-8). In talks at the Shaanxi Shifan Daxue and Beijing Shifan Xueyuan I found confirmation of these views. Already at the former there are courses in both English and American literature during the third and fourth year of the English language courses and these are probably widespread at present.

In addition to employing foreign language teachers for periods of one year and more and integrating them into the normal language courses various Chinese authorities, usually at least in conjunction with the central Ministry of Education, have invited groups of foreign teachers to hold special language courses. The British Council has held vacation courses regularly since 1975 in such places as Qingdao, Chongqing, Beijing and Nanjing. Teacher training courses and English for Science and Technology courses have been held in Nanjing, Shanghai and Chengdu and at least one three-month course has been held in Xi'an. (British Council Report, 1980-81). In 1981 a joint project was started between the Second Foreign Languages Institute in Beijing and the Canberra College of Advanced Education, Australia. Under the Australian Development Assistance Bureau, which is expected to spend $A.2 million on the project, classes of scientists and technologists are being taught English by a mixed team of Chinese and foreigners in Beijing while some 50 Chinese language teachers will receive training in Canberra over a number of years. The aim appears to be a combination of language training and teacher training. One of the problems which such a project has is that Chinese language teachers know no science and in my experience many are neither widely technically read nor feel the need to be. It would be interesting to know what plans the Canberra team has to overcome this. Returning to an earlier point, classes in the political, etc. culture of the English-speaking world will not help future teachers of Special (science) English meet this particular hurdle.

Related to foreign language teaching is the question of testing, and here again it would seem that the Chinese authorities are uncritically accepting certain foreign models. In 1981 a formal agreement was signed in Washington between the American Educational Testing Service and the Chinese Ministry of Education. The latter set up a special agency, the China International Examinations Coordination Bureau for the Administration of the Test of English as a Foreign Language (TOEFL) and the Graduate Record Examination (GRE). The former appears to have been made a test for the receipt of government funding to study abroad. While of course some guide as to standards is necessary there is doubt as to whether the particular cultural content of the TOEFL makes it the best which could have been chosen. Also there are already signs that this examination will react down into the schooling system and students and teachers will become more concerned with passing the test than with learning English. Unfortunately there are few signs that the authorities, at least at university level, are sufficiently aware of testing theory to deal with such problems, or even, perhaps, to detect them. (*China Exchange News*. September, 1981, p. 13).

While according to the New China News Agency there were by 1981 some 500 foreign teachers of foreign languages and the social sciences a further 300 annually paid shorter visits to lecture on a wide variety of subjects. (*China aktuell*, November, 1981, p. 718). Potentially significant is the support being provided under the Fulbright programme to influence Chinese English language programmes in the direction of American Studies. In 1980 the first team of 11 Fulbright lecturers went to Beijing University, Tianjin University, the Beijing First Foreign Languages Institute and the Shanghai Foreign Languages Institute to teach English language. In 1981, in addition to six language teachers a further six Americans went to teach history and literature. Plans for September, 1982 were to send 13 lecturers and to include economics, law and political science. In 1983 and beyond the US International Communication Agency, which is responsible for the programme, is planning to concentrate on "developing a strong American studies programme in China through the exchange of American lecturers and Chinese students and scholars" (*China Exchange News*. 1982, p. 15). While one can only agree with the general principle of Chinese learning more about the realities of foreign countries one hopes that the lure of foreign aid and the energy with which the Americans appear to be pushing their policy will not bias the direction of such learning. As was mentioned earlier, English is an international language, and not solely an American one, and besides the other countries of British descent there are significant parts of Africa and Asia where English is of major importance. However, this does not appear to be reflected in the teaching programmes of those Chinese institutions which I have seen.

Another area in which Chinese academics seem to be looking abroad for advice is education and educational psychology. Since outside China these are controversial areas in which the relation between theory and practice is highly problematical one wonders what useful things the Chinese can learn. It is to be hoped that they will be able to tap a variety of schools of thought, and especially those which have tried to get away from education and psychology as bodies of theory to be memorized. as clearly the present Chinese materials in these subjects are. But it is more likely that what will prove attractive are courses and materials closer to the traditional Chinese academic pattern.

Libraries

Many of those who have taught in China have remarked on the underuse of the many remarkable collections of foreign language materials which are stacked away in the libraries of China's tertiary institutions. Access to these and other materials appears to be hierarchically controlled in a way which far exceeds anything practised in the major countries abroad. This, together with the gulf in understanding which separates foreign advisors and Chinese administrators and teachers makes one sceptical of the current wave of aid for libraries which is being planned. One such scheme is that the United Board for Christian Higher Education in Asia, recipient of funds through the recent China Claims Settlement and thus able to begin again a mission which many had thought ended in 1951. Under an agreement with the Chinese Ministry of Education and the Chinese Society for Education the United Board proposes to devote a large part of their funds for the next three years to the provision of books, periodicals and library equipment such as copying machines and microfiche readers. Books will be provided by American book distributors on the advice of representatives appointed by the United Board. The main immediate beneficiaries will be Sichuan University in Chengdu and Shaanxi Teachers University in Xi'an, not to mention the U.S. publishers whose stocks will be cleared. It would seem to be unlikely that many Chinese students will obtain access to really useful books or materials through these measures. (China Exchange News. June, 1981, p. 1).

Students and other Contacts

While foreign students by definition go to China to learn rather than to teach, inevitably they become models of the foreigner for many Chinese in situations where this can exert great influence. It is part of my argument that cultural borrowing is not necessarily a conscous process and such influences as contact with students at a formative stage of life may be more significant than, or at least as significant as conscious borrowing. The latter can often be very superficial and easily cast off again when the foreign influence or aid is removed.

Two things, however, contribute to making the influence of foreign contact relatively small. Considering only the students, they remain, in spite of recent increases in contact with universities abroad, rather few in numbers and confined for the most part to a handful of the major tertiary institutions: the Beijing Yuyan Xueyuan (Languages Institute); Beijing University; Shenyang University, Fudan University in Shanghai, and more recently such institutions as Beijing Shifan Xueyuan (Teachers Institute) and Shaanzi Shifan Daxue (Teachers Univerrsity) in Xi'an. The New China News Agency report of November 1981 speaks of 2,000 foreign students in China (*China aktuell*, November, 1981, p. 717). This compares with 11 44,000 Chinese students spread through 675 tertiary institutions in 1980, Ministry of Education figures in *education in China*, pp. 27-30). Contact is further reduced by the policy of segregation which, though reduced, continues. While students, in contrast to foreign teachers and other "experts", are normally housed on campus they have often been taught separately and there are many reports of difficulties in maintaining friendly relations with Chinese students. Sally Borthwick, in China in 1974-75 before the easing of relations, speaks sensitively about relations between the foreign students and the "foreign students' office" of Fudan University:

> At the time, there were frequent ripples in our relationship, deriving I think partly from uncertainty as to whether their primary task was to minister to our needs or to keep us in line. We found over-protection and restriction to be two sides of the same coin; it was assumed that we would find it difficult to live under Chinese student conditions. (Fitzgerald and Hewitt. p. 33).

Issues she cites include sharing a room with a Chinese student and whether foreigners should or should not eat with their fellow Chinese students. Anne McLaren, also at Fudan, but in 1978-79, speaks of her "great good fortune" in being there at a period "characterised by an almost unparalleled freedom of contact between foreigners and ordinary Chinese people". But at the same time she speaks of only a "partial breakdown of the policy of excluding foreigners from Chinese society" (Fitzgerald and Hewitt. p. 161). Room sharing, which according to Michael Nylan

> many American graduates regard...as the single most important means for understanding Chinese culture today, (Nylan. p. 131—AJCA).

was reported to be under threat in 1980 and is certainly not universally practised. All these things are important if familiarity is to reach a point where understanding, let along borrowing is to take place. Those who have experienced the gulf expressed in the epithet "*waiguo ren*" (foreigner) will know the distance which must be crossed. (cf. Pamela Hewitt in Fitzgerald and Hewitt, pp. 147- 53).

Here one might pause to consider how that other source of contact with the foreigner, tourism, may affect the stereotypes and contribute, positively or negatively, to greater understanding. The great majority of foreign tourists move about in groups and apart from Chinese serving them in shops and hotels or students attempting to practise their languages make little contact other than visual. Also their numbers (some 1,60,000 in 1979—*China aktuell*, Fubruary, 1980, p. 96) and restricted locations limit their impact. It would seem that a major impression they are likely to reinforce in the affluence of foreign countries, an impression the much more numerous oversea Chinese visitors are likely to further stamp in. (They accounted for some 8,00,000 visitors in 1979—same source).

Conclusion

Compared with the earlier periods of cultural borrowing China now appears to be much stronger and united, while in the past few years the capitalist world has again displayed its capacity to create unemployment and misery on an astounding scale. But this is a focus which probably fails to reveal the key surfaces of interaction. For government leaders and technologists the lure of high technology and the wealth and power of immediate contacts may hide from view the subtle social values and structures embedded in the borrowables. Those wishing to erect a legal system which will protect them from another Proletarian Cultural Revolution or facilitate implementation of foreign contracts lack the anarchomarxist suspicians of a Mao Zedong. Patriarchal traditions, Russian Communist Party styles of authoritarianism and the lack of a strong, democratic challenge from below combine to make foreign borrowing a real threat to the development of genuine socialism. In the guise of scientific efficiency American business methods and the paraphenalia of the "diploma disease" may be seen as attractive to the aspiring among the intelligentisia. The understandable need for greater comfort and greater personal freedom may result in the adoption of foreign standards and values, thus further exascerbating the urban-rural and mental-manual labour divisions till these destroy the policy of modernisation which the borrowing was intended to assist.

What will happen will depend on whether the Chinese leadership can evolve a social philosophy enabling them to borrow consciously and selectively and whether this can inspire her young people to view the foreign world critically. This is not the same as taking the technology without its embodied values, but is making a new synthesis. If this is not done cultural imperialism could become a fact and China could again be made safe for foreign investment or be a source of cheap labour and raw materials. In the immediate future the more probably scenario is continued hesitations and fears, especially at middle levels of decision-making, which will hamper learning from abroad and inhibit those who might otherwise strike out along new and critical paths.

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Fair Access to Higher Education: Reflections on India's and China's Experience of the Past Thirty Years

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In the 1960's and early 70's a small academic cottage industry had produced a number of comparative papers on India's and China's efforts to strengthen their economies, reconstruct their political institutions and rejuvenate their ancient cultures. I was an insignificant member of the "artisans' guild" of this cottage industry. I do not belong to that guild any more.

It may be of some value to indicate my major reason for giving up the comparative study of India's and China's attempts to relate education to the reconstruction of their societies.

Attempts to compare India and China usually consisted of three stages. First, the basis for comparison was articulated by referring to features and problems common to both India and China. They occupied large territories and have huge populations. Most of the people in these two countries lived in rural areas, and were part of a peasant economy. Both India and China were rich in natural resources. Yet most of the people in each of these countries had been living in appalling poverty. Many of the reasons for this poverty as well as the economic backwardness of these countries were at least superficially similar if not identical: they had suffered much civil strife, had been exploited by their own upper castes and classes as well as by western colonial empires, and had inadequate irrigation facilities, not much industrialization, low levels of literacy and so on. India became politically independent in 1947 and China proclaimed a People's Republic in 1949. They proceeded at about the same time to embark on the gigantic task of social reconstruction. Their ultimate goals—as stated in official documents and declarations—were similar: to promote industrialization, breathe new life into rural life, create institutions which would provide opportunities for everyone to participate in the material and cultural life of the society.

The differences between India and China and between Indian and Chinese attempts to reconstruct their societies were emphasised in the second stage. Here are some examples: (1) India's achievement of independence in 1947 was fundamentally an orderly transfer of power from Britain to the two new nations of India and Pakistan and did not directly address the problem of political and cultural domination of the vast majority of the people by small groups which owned or controlled the means of production. In contrast, China's proclamation of a new People's Republic was precede by a sustained war against the classes and foreign powers that owned or dominated the means of production. (2) India had chosen to follow the Western form of parliamentary political democracy whereas in China, the Communist Party was the only major legitimate vehicle for political expression. (3) India's economic development strategy was "evolutionary" or "gradualist" whereas China's strategy was "forced-draft" or "rapidly transformationist". (4) India was working toward the goals of a welfare state whereas China was working first toward a socialist state and ultimately a communist society. (5) India had been quite open to Western influences whereas China, until recently, had closed its doors to the West.

In the third stage of comparison, the achievements of India and China were estimated. In this process of estimation, a number of qualifications were mentioned. Here, again, are some examples: (1) The available information on India was far superior in terms of detail, scope, comprehensiveness and reliability to that available on China. The relative "openness" of India provided the scholar with much better opportunities to evaluate the information he got in terms of its appropriate social context. These differences about data created serious reliability and validity problems. (2) It was impossible to form definite conclusions about the relative progress of each country because one cannot correctly calculate the cost of the personal suffering and social dislocation which result from major political and economic decisions. However, despite these caveats, the general conclusions have been, for the most part, that China has forged far ahead of India.

Let me now state the reason for my decision not to pursue India-China comparisons any more. The revelations of the past five years, i.e., after the ascendency of Deng Xiao Ping, have convinced me that I cannot understand events in China reasonably well enough to undertake serious comparative work on India and China. I say this despite my view—or is it a faith)?—that China has probably by now laid the foundations for significant progress for its people as a whole.

The Approach of This Paper

You may wonder: what the point of this confession? It sets the stage for me to present here a few statements about the topic of my paper without reference to census or, for that matter, any other kind of data. Since I have spent several years thinking about the possibilities and problems of comparing India's and China's educational record, one or two of my reflections may be of value to a younger (and a less cynical) scholar.

Post-Secondary Versus Higher Education

A conventional definition of post-secondary education implies successful completion of some type of post-primary schooling and means further studies in institutions or programs which lead to certificates or degrees valued higher than a secondary school diploma. If one were to undertake a genuinely comparative study of India and China, this definition would not be satisfactory for one important reason: during the period of the Cultural Revolution (1966-76), successful completion of secondary education was not a requirement for admission to, or selection for, post-secondary studies.

The term "post-secondary education" recognizes several types: universities, technical institutes, teacher training centres, community colleges, correspondence courses, programs for further education or training offered in factories, community centres, etc. However, there is a tendency in the literature to equate the problem of access to post-secondary education with the problem of access to institutions or programs which offer possibilities for improvement in one's occupation, income or status. This is understandable because problems do not arise until, among other things, demand far exceeds available supply precisely because completion of a course of study has economic, political and social status complications far beyond the intrinsic value of the educational experience. Therefore, I shall now use the term "higher education" implying universities and other institutions which lay the foundation for or provide education in the professions and semi-professions.

Preliminary Consideration of the Concept of Access

The concept of access belongs to the family of concepts and theories concerned with equality of opportunity. In both India and China, in the early 1950's, there was much support for the view that everyone who meets the minimum prescribed requirements should have the same opportunity to make use of available higher educational resources. Assuming that in any large group, abilities should follow the normal curve, true equality of opportunity should eventually result in proportional representation. If a group is seriously under or over represented, the principle of access is widely perceived to have been breached. Proportional representation is the most significant long-term test of whether true equality of opportunity exists.

Equal (or fair) access does not guarantee equal outcome because a number of intervening variables—such as the personal abilities and prior preparation of the individual, the quality of instruction a person receives, the informal atmosphere of the educational institution, and the stratification within the educational system—affect the outcome. Yet, fair access is a necessary first step. Why is access a necessary first step? Decisions to provide access are decisions to alter structural arrangements. We have already noted that decisions about structures cannot directly determine what processes must or do occur. Nevertheless, structures do determine or at least significantly influence the degree to which processes are able or unable to take place.

Importance of the Issue of Access to Higher Education

I have already mentioned the ultimate goals of reconstruction in India and China. Fair access to institutions of higher education for classes or groups of persons who did not have such access before 1949-50 was seen as one important element in ensuring that policies to promote economic growth, distribution of the results of that growth and participation in the material and cultural life of the society would be based on principles of justice as well as long-term efficiency.

To claim that fair access to institutions of higher education is one important element in ensuring social reconstruction based on justice and efficiency does not deny that priority must not be given to extending access to the first and second levels of education. Fair access to institutions of higher education is important even in terms of that priority. In India and China, as in many other countries, the requirements of higher education tend to shape decisions about curriculum, examinations, etc. at the lower levels of education.

Access: Two Perspectives

There are two perspectives from which the problem of access can be viewed.

We may call one "the justice perspective". The predominant concern of this perspective is to argue on *a priori* grounds that every individual has the right to have fair access to high status or socially powerful knowledge as well as the opportunity to compete for scarce resources and rewards in society that the possession of such knowledge provides. It is argued that such access, in the long run, creates the conditions for political stability because it increases the percentage of people who have a stake in the system. Finally, the full utilization of available talents in a society in a given period is seen to be economically efficient as well. However, within "the justice perspective", arguments on political and economic grounds are clearly secondary to the principal argument that fair access is a small step toward the giant leap for shaping a more humane society.

The second is "the humanpower perspective". The major concern is to find the individuals who have those abilities which can be honed to a high level. These individuals, it is argued, will occupy the leadership positions in the economic, political and cultural institutions of society. In the "humanpower perspective", fair access is justified on pragmatic grounds. It is, as it were, necessary to cast the net as widely as possible to ensure that the best possible individuals are "caught" for study in institutions of higher education. The focus of attention is not on practices which lead ultimately to a more humane social order but on immediate and intermediate solutions to economic, technical and leadership problems.

The emphasis in "the justice perspective" on providing opportunities for individuals to develop their latent abilities eventually leads to arguments for taking account of and, if possible, mitigating unfair conditions so that fair results would ensure. In "the humanpower perspective", it is acceptable for the educational system to operate as a "great sieve" to enable the most talented individuals to emerge and serve society's needs.

As I have already suggested, these perspectives are not mutually exclusive. Indeed, several wealthy, Western societies have attempted to reconcile these perspectives by providing open access to the higher educational system as a whole while restricting admission to particular institutions and programs within the system. James A. Perkins has referred to another facet of such reconciliation as "entry by egalitarian principles and exit by meritocratic standards". Practices such as "coaxing in" and "cooling out" are concrete manifestations of attempts to pay homage to both the justice and humanpower perspectives.

Observations on the Indian and Chinese Cases

India: inheritor of an ancient civilization which valued scholarship in the abstract fields of philosophy, mathematics, astronomy and linguistics; fountainhead of three major world religions which emphasised continuity of all life-forms even through death in the concepts of *Karma, dharma* and *reincarnation;* until the late nineteenth century, a caste society built predominantly on the foundations of joint family in village economies; a nation-state, created in the first place by British imperialism and later fashioned by a national bourgeoisie; a people whose attitude towards colonialism has been consistently ambivalent; a newly industrializing, late developing country.

China: inheritor of an ancient civilization which valued scholarship in ethics, the art of imperial government, science and technology; source of ways of life which emphasised rules for stable relationships in family, community and empire; until the late nineteenth century, a clan society predominantly characterized by peasant economic and cultural relationships; a proud, ancient state reborn in a twentieth century violent revolution; a people who viewed the colonial experiences as a humiliation of a great people by lesser people who happened to have temporary technological superiority; a newly industrializing, late developing country.

We may note several contrasts between India's and China's approaches to the issue of access to higher education.

If one casts a glance over the thirty years of India's and China's experience in the area of access to higher education, one striking contrast becomes immediately apparent: in India, policies for providing access to poor and/

or disadvantaged groups have not given the appearance of swinging from one extreme to another as has been evident in China.

Two caveats are in order, however. Both in India and China, these policies have created controversy although in India they were more like storms in contrast to the tornadoes in China. Also, my statement refers only to policy pronouncements and reactions to them. For reasons I have already mentioned, I do not know about the extent to which these policies were implemented in China.

The Justice Perspective

A second contrast is even more striking. In India, official policies to provide access to higher education to previously excluded groups have, in the first instance, clearly recognized the overwhelming importance of caste and caste-like groups in Indian society. The former "untouchables" known as the scheduled castes were specified in the Constitution of India as deserving special consideration for admission in institutions of higher education. In China, the emphasis was on class and class-like features of Chinese society. Manual workers and poor peasants were the two main categories that, according to Chinese official documents, deserved favourable discriminatory treatment. (I consider the Scheduled Tribes of India and the National Minorities of China to be similar for my purposes and, therefore, will exclude them from discussion). Understandably, the Chinese Communists could not give official recognition to the clan. But some of the sparce evidence available to us—through, for instance, criticisms of evils such as "back door" admissions—suggests that clan loyalties have not been eradicated.

In India, caste criteria for policies of access were eventually broadened to include a number of other disadvantaged groups. However, they were referred to as "Other Backward Classes" (OBC's), although caste status was still the primary method of identifying them! This term is interesting for two reasons: it implicitly recognizes that in India caste continues to be a reasonably valid aggregate indicator of disadvantage. At the same time it also recognizes that in modern, industrializing India, caste cannot for long continue to be a valid proxy for economic disadvantage and that some individuals in the so-called high castes may well be more deserving of favourable consideration than some members of the so-called low castes. In China, too, the attributes of workers and peasants deserving favourable consideration has been a highly controversial issue. For instance, should manual workers be considered superior to mental workers was a persistent issue during the period of the cultural revolution.

Let me rephrase the point I have just made. The application of "the Justice Perspective" in India has been primarily based on caste criteria and in China on class criteria. In both countries, the criteria have been challenged on logical grounds and criticized on empirical grounds.

In both India and China, attempts have been made to change the policy to meet these challenges and criticisms. In India, attempts have been made to develop a composite and fair disadvantage index which takes account of caste, income level and scholastic record. But, in a country not noted for its bureaucratic efficiency, the conceptualization and implementation of such an index have been riddled with problems. Through the cultural revolution, the Chinese attempted to confront the root problems of access. But, as the entire world now knows, they met with a host of problems.

I have already referred to the difficulty of getting or producing meaningful comparative data on India and China. Yet there is one data base which we can use. The number of students in institutions of post-secondary education in India rose from 3,60,000 in 1950-51 to 3,030,000 in 1978-79. This was an increase from 0.8 per cent of the total population in the age group 17 to 23 to 4.1 per cent of the same age group in 1978-79. The most recent data I have seen on China was the composite table in Suzanne Pepper's article in *The China Quarterly* of March 1981. In 1949, there were 3,37,000 students in Specialized Secondary and Tertiary Institutions in China. In 1978, there were 17,30,000 students in these institutions. I have decided to consider Specialized Secondary Schools as a form of tertiary education for my purpose here. I could not find any statistic which reports this number as a percentage of the relevant age-group. So, we must be content to note that China's population is currently estimated to be 300 million more than India's. There are two serious major problems with this information: the evidence I have seen suggests that post-secondary education of various types are available in farms and factories in China. Such "non-formal" programs are apparently not as widely available in India. If one included these programs, the Chinese record would appear to be more impressive than the statistics I have just cited would lead us to believe. The second problem is even more intractable. It appears to be the case that in China a much higher percentage of the relevant age-group is in elementary and secondary schools than in India. If there has been a deliberate policy in China to eradicate illiteracy and build up the first two levels of formal education, that decision could account for some—certainly not all—of the difference I have just documented.

Yet, what does this statistic about formal education tell us? Setting aside the extremely vexing problem of quality, we may reasonably infer that individuals in previously excluded groups would have had greater opportunities to enter institutions of higher education in India than in China in the past 30 years.

A few other facts serve to strengthen this inference. In India, non-governmental associations and agencies have the constitutional right to open and operate educational institutions. Hindu, Muslim, Christian and other religious groups as well as organizations incorporated on more secular criteria have established a large number of institutions of higher education in India in the past 30 years. These institutions are required by law to set aside a certain percentage of places for Scheduled Castes, Scheduled Tribes and other Backward Classes. Moreover, these non-governmental institutions which charge high fees tend to attract the children of the more affluent families in India. The result is that places become more available in government institutions of higher education for the children of the less affluent families. Finally, a large number of institutions of higher education have been established in many rural areas of India in the past 30 years for a curious political reason. Elected politicians have extreme difficulty in bringing about fair land distribution or other meaningful economic or political changes because the regional and national elites would oppose such measures. But one project that a politician can promote without much controversy and also claim to have resulted from his efforts during re-election campaigns is that he helped to bring a government college to his constituency. Usually, he gets support from his Chief Minister and/or Cabinet for establishing such a college because they too are interested in his re-election. This essentially selfish motivation— no doubt, supported by the social demand for some type of post-secondary education—has resulted in the establishment of a large number of colleges and institutes in areas where such institutions did not previously exist. Many of these institutions have very meagre facilities and their academic standards are extremely low. Nevertheless, they do provide opportunities for higher education to persons who did not have such access before. I have not been able to detect the operation of similar factors in China.

Who has benefited from the expansion of higher educational opportunities in India? Not the poorest castes or classes but two types of individuals: those who are already in the upper and middle classes or castes but whose family history has not so far included attendance in institutions of higher education; those whose families a generation or so ago have entered the lower rungs of the middle class but aspire to continue their upward mobility.

The Humanpower Perspective

Let us now look at the problem of access from "the humanpower perspective". Let us recall that the emphasis in this perspective is on the solution of immediate and intermediate economic, political and technical problems. Although there is, in this perspective, a long-term argument based on efficiency for improving access to everyone, in practice, the emphasis is on selecting the most appropriate students for further studies and training so that they can be put to useful work that develops the country.

The "humanpower perspective" has always been perhaps the most important element in Indian economic and educational planning. This is evident from the establishment of a large number of engineering, medical, teacher training and technical colleges and institutes in the past 30 years; the founding and maintenance of five world-class Institutes of Technology under government auspices; the creation of a large number of national post-graduate research and training laboratories and institutes; the maintenance of a national register of highly qualified scientific and technical personnel; the relatively more generous financial assistance given to all types of bonafide post-secondary scientific and technical programs and institutions; and, maintenance salaries paid to qualified, unemployed scientists and engineers.

The evidence we have shows that China also gave considerable importance to "the humanpower perspective" until the period of the "Great Leap Forward" (1957-59). Since 1976, "the humanpower perspective" has again become very prominent in China.

But during the Cultural Revolution, "the humanpower perspective" was heavily criticized and virtually abandoned. The reason was that policies based on "the humanpower perspective" tended to disproportionately favour those groups or classes which have been exposed, through several generations, to academic studies. Such policies, then, appear to become public justifications for reinforcing and continuing class distinctions. It is interesting to note that during the Cultural Revolution—which promoted "the Justice Perspective"—the personal interview became an extremely important aspect of admissions policies and, reportedly, helped reduce the importance of academic performance.

In giving the personal interview such decisive importance during the Cultural Revolution, the Chinese were using a technique that the Upper Castes and Classes have been known to use for keeping out "undesirable" candidates. During the Cultural Revolution, the interview was apparently used to benefit manual workers and poor peasants. History is full of ironies. In the West, in the early 20th century, academic performance was given decisive importance to help reduce the biases inherent in the interview process, and to reduce the harmful effects of patronage systems. This was, of course, before scholars discovered the problems imbedded in the processes by which academic performance gets evaluated.

It is now *au current* to denounce the Cultural Revolution as China's "ten lost years". Yet, during the Cultural Revolution, China appeared to be tackling issues that India had not even debated widely. India appears to have decided that fixed quotas of percentages for the Scheduled Castes and Other Backward Classes will be sufficient to respond to the issues raised by "the Justice Perspective". Its primary allegiance to the "humanpower perspective" has conveniently served the interests of the Upper Castes and Classes as well. Is this an accidental coincidence? I think not.

Conclusion

Institutions of higher education tend to be carriers of an urban way life. They tend to attract a disproportionately high percentage of their students from the upper and middle classes. The aspirations of these students are to work in modern scientific, technical or professional sectors of society, preferably in urban areas.

Both India and China attempted to establish rural universities which would counter the tendencies I have just mentioned. India's goals were very limited and its earnestness was never more than lukewarm. China, during the Cultural Revolution, set ambitious goals and was apparently very earnest about its intentions. Neither India nor China has had resounding success in these efforts.

In the middle of the 18th century, Thomas Gray wrote a peom entitled "Elegy Written in a Country Church Yard" about common folk who had lived and died in an English Village. One of the verses in his poem speaks from "the Justice Perspective" that will continue to be true for millions of people, especially in the villages, of India and China:

> But Knowledge to their eyes her ample page
> Rich with the spoils of time did ne'er unroll;
> Chill Penury repress'd their noble rage,
> And froze the genial current of the soul.

Here is another verse:

> Full many a gem of purest ray serene,
> The dark unfathom'd caves of ocean bear;
> Full many a flower is born to blush unseen,
> And waste its sweetness on the desert air.

Is that a poet's way of presenting the case from "the humanpower perspective"?

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Developmental Goals & Women's Higher Education

LATA MURUGKAR

Since Independence India is trying to achieve its constitutional goals of equality through democratization, prosperity and industrialization. As the different segments of society are interrelated, the changes in one segment affect the others. Thus the education is not an end in itself but relates to the social and political goals of the society. Looking from this point of view towards the higher education of women, it appears that the changes occuring at this stage are not in tune with the fulfilment of national goals. This paper tries to examine the relationship between the following aspects—democratization, economic development, rationalizaton and anti-natalistic policy and women's higher education.

Democratization

It was expected by the planners that through the expansion and democratization of educational opportunities the constitutional aim of promoting equality will be fulfilled. But it appears that this goal has remained largely unfulfilled.

Enrolment of women students in universities and colleges increased 15 times (against about 8 times for men) between 1950-51 and 1970-71, their number was 22.1% of the total enrolment in all higher educational institutions.

The percentage of enrolment of women students in 1980 was 26% as against the expected figure of 33 per cent by Kothari Commission in 1964. In spite of the expansion efforts, the enrolment of girls at all stages still lags behind that of boys. At higher educational stage the number of girls was 14 to every 100 boys enrolled in 1950-51 and it increased to 31 in 1973-74.

If we look at the statewise development of women's enrolment in higher education, it is evident that economically and socially less developed states such as Madhya Pradesh, Orissa, Bihar, Rajasthan, Andhra Pradesh and Uttar Pradesh have the lowest enrolment at higher educational level and the biggest achievment is of Delhi, Kerala, Punjab and Tripura (M.R. Rabindranathan 1975: 262). The National Committee on Women's Education 1959 had urged the government to close existing gap between the education of men and women in as short a time as possible. This was reiterated by the committee on Status of Women in India 1975.

The enlargement of educational opportunities at higher educational level for women has mainly benefitted the higher caste and higher class (Shah-1964; 19-22, Parekh 1966:56, Naik 1965:22). Naik focussed on this problem when he said "educational development particularly at the secondary and higher stages is benefitting the haves more than the have nots" (J.P. Naik; 1965). Higher education among women has remained and continues to remain the monopoly of girls coming from higher social and economic classes (K. Ahmad—1974:190). It is also observed that the difference between the sophisticated and expensive women's institutions and comparatively inexpensive and moderate institutions is increasing the disparity between the upper and lower strata of the society.

Besides this it is found that the women students from lower class background join the colleges whose standard and academic reputation are not always enviable (K. Ahmad—1974 : 187). This trend in the educational enrolment is increasing to the stratification of society by separating upper and lower strata. From the above discussion it appears that the constitutional goal of equality is still not achieved at this level of higher education of women. To remove this ineqality there is a need for concerted governmental efforts. At the same time it is very necessary to bring about community awareness about the importance of women's education.

Economic Development

According to experts the task of human resource formation is the most important for a developing society. As women constitute about 48% of the human resources and work force in India, their effective participation in all walks of life would go a long way to boost up the national economy.

Growing inflation and higher standard of living have compelled the women to engage in gainful activities. Over 70% of the respondents to the questionnaire issued by the committee on the Status of women in India, justified education of girls as an insurance against economic need. Besides this the women's movement and raised aspirations of women in urban area are urging the women to become an active participant in the developmental programme. However the statistics relating to unemployment and to declining trends of women in various occupations indicate that women are not achieving formal equality assured by the Constitution.

Women's share of unemployment at graduate and post-graduate levels is about 50% of the total at these levels which indicates higher proportionate incidence of unemployment among them. The most depressing picture however is presented by umemployment among arts and commerce women graduates and post-graduates. Job opportunities are very limited to the arts and commerce women graduates as they are not well equiped for any particular work. This leads to the concentration of women at grade III level services. Further increase in their present proportion of university level enrolment is bound to create more unemployment, frustration of expectations, unnecessary waste of resources unless most of their first degree courses are transformed into productive and skill oriented work in appropriate academic-professional institutions. Vina Mazumdar had cited the example of 50% graduate prostitutes of Calcutta, whose inability and lack of equipment for any other mode of employment has dragged them to prostitution. (V. Mazumdar : 1981). To solve this problem it was suggested by the Kothari Commission that "for a large number of women students, there is need for linking up higher education with specific avenues of employment where the services of trained and educated women are urgently required. Some of the fields where women's services were required and where shortages existed were identified by the commission to be teaching, social work, nursing and series of occupational fields such as nutrition, dietetics and institutional management. There is a need for diversification of courses offered to women by universities.

Diversification of curriculum to provide not only knowledge but also skills is the need of the time. Some of the courses related to the employment in areas of management such as insurance, commerce, office management, store management, retailing and trade could be linked up with arts subject like economics. In the languages the training in reviewing the books, and column writing could be helpful in getting the suitable part time job in journalism.

In spite of the formal recognition of equality of opportunity, educated working women, in particular, still suffer from considerable discrimination such as in types of jobs, salary scales, promotions, rules of service. It is found that women's employment is confined to a few occupations such as teaching, nursing, clerical and related jobs with low status. For instance in central and state government services as well as in banks and insurance offices the largest concentration of women office workers is in class III jobs. The number at higher level jobs is still insignificant except in medicine, education, scientific research and social welfare. Moreover, those who find entry into the elitist sector of educated employment mostly come through the elitist stream of education. To avoid this concentration of women workers at grade III level Services, some new courses should be introduced in existing university curricula, which would open the avenues at grade I level services. For example managerial skills required for the welfare officer, (health officer) family planning officer could be taught in one of the applied papers of sociology. According to the 1971 Census Report, women earn lower salaries than men despite having the same qualifications. Again there are declining trends of women in various occupations such as teaching, nursing, medicine. The report of the Committee on the Status of Women focused on this alarming trend. This indicates that there is an adverse relation between education and employment and even the qualified women are not achieving this formal equality.

In the developmental programmes of the country the women are considered as beneficiaries of development rather than an active participant (N. Desai : 1978). Secondly, those who get education do not find employment because of the scarcity of suitable jobs in an inordinately slow moving economy where men get the first preference.

Curricula—Special Institutions for Women and Inequality

Differences in curricula and special institutions for women help to perpetuate the atmosphere of inequalities. Committee on differentiation of curricula for boys and girls 1964 has posed the basic issue squarely by declaring that in "the progressive society of tomorrow, life should be a joint venture for men and women". This view was once again emphasized by the Committee on Status of Women in India. The specialized courses in the women's institutions such as polytechnic and homescience are helping to perpetuate the inequality in the sexes. The objective of female education is still considered as making them better but junior partners at home rather than as active and equal participant in the entire social economic, political or cultural life of the community. This attitude of the society and its educationists to the curriculum content of women's education is another indicator of inequality and discrimination between men and women. Therefore there should not be any differentiation in the course content for men and women. The courses which are considered appropriate for women should also be provided in almost all educational institutions.

Women's colleges increased in number from 81 in 1953 to 577 in 1980. It is observed that in 1972 out of 435 total number of women's colleges 250 had an enrolment of less than 500 and some 50 had less than 103. It is clear that with so low enrolment, the survival of these colleges is difficult without some private resources. Mere expansion of educational institutions for women or the increasing enrolment of women students will not achieve equality or development unless education undergoes a qualitative and stuctural change. It is necessary to implement the recommendations of the Status of Women committee for adoption of co-education as a general policy and discourage opening of new colleges exclusively for girls. At the same time all necessary steps should be taken to maintain good standard of teaching in the already existing women's colleges. Knowledge is taking swift strides and it has become necessary for the teachers to be in touch with the latest in the respective branch of study. Most of the teachers (with some honourable exception) are apathetic toward this need. It is proposed that there should be frequent programmes such as seminar, symposium, refresher courses to update the knowledge of teachers.

Rationalization

Rationality is considered as the basic element in the process of modernization. It implies the new out look, objectivity, belief in progress and attitudinal change. Higher education of women is expected to spread the scientific attitude which helps in abolishing the superstitious outlook. The study conducted of the working women science degree holders in Bombay shows that the largest number accept many traditional customs and practices inspite of objective training in science (Maithreyi Krishnaraj—1976:56). It appears that socialization of women in traditional ways is so thorough that the higher education is least effective in changing the perception. Moreover it is not instrumental in creating general political or social awareness in women. It has not changed the reading habits of the women (excluding a few) who generally prefer light reading. It is proposed that to change the reading habit of light literature, the girls should be assigned small projects where they should be asked to collect relevant material and should be directed to organise and evaluate it properly. This may perhaps help to inculcate the habit of reading critical literature.

Higher education is supposed to broaden the minds and raise the level of aspirations. The upper and middle class culture to which most of the educated women belong still largely cherishes a life of leisure and home-making more than a life of work, provided it is sufficiently better off. Even if it is agreed that the role of housewife is equally important the question arises whether the higher education is equipping the girls to perform multiple role of a housewife. Again it is observed that the outside activities widen the knowledge and experiences which makes a person mature. According to 1971 (sample) census out of the 4 lakh graduate women only 1.5 lakhs that is less than 40 per cent were working and only 1.1 lakh others were seeking employment (A.R. Kamat-1976:18). The bulk of the middle and lower middle class educated women are confused about the goals of women's emancipation. Among a section of the educated women however there is a growing consciousness about the struggle for emancipation. Unless education equips women to be economically, psychologically, socially independent it has no relevance and will only further strengthen sex stereotypes and increase the dependence of women. It seems that the higher education has failed to inculcate the new values which are conducive to the development of our country with justice.

Antinatalistic Policy

As we all know population problem is the biggest current problem of Indian Society. It is hindering the path of development. Pronounced policy of the Government of India to control this speedy growth of population includes the legal measure to raise the age of marriage. To implement this policy effectively it is necessary to expand the higher education as much as possible to keep these teen age girls busy. The different studies have proved that there is a co-relation between women's higher education and decreasing number of children. The raised age of marriage makes it obligatory for the government as well as the society to keep these grown up girls engaged in beneficial activities. Despite significant advance only 4.4 per cent of girls of the age group 17-23 years take to higher education.

As educated women are the catalysts of change, more and more women students from the lower strata and rural society should be enrolled for higher education.

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Notes from Research

TRENDS IN PROFESSIONAL EDUCATION AMONG WOMEN*

An attempt has been made in this paper to analyse the progress made by Women in the field of Professional Education during the period 1960-61 to 1976-77 and to also study the popularity of different types of Professional Courses among Women. The analysis has been made separately for the two stages namely undergraduate (pre-degree level) and post-graduate (Degree and above standard) separately. To study the sex differentials in Professional Education, the comparative analysis of Women with total population (Men and Women combined) has been made during the period 1960-61 to 1976-77.

Scope and Limitations of the Study

The analysis has been made to study the existing trend at All India level only i.e. State-wise trends have not been studied which are equally important keeping in view the diversified nature of Indian population affecting the choice of Professional Educational courses among Women. In this way this study gives a macropicture of the Womens progress in the field of Professional Education.

The subject of Commerce and Business Management have been clubbed together though the position may be quite different in respect of these two special categories for Women as compared to Men. Similarly, about the courses on Medicine it may be mentioned that Medicine includes Allopathic, Homeopathic and Unani System of Medicine, Nursing, Dentistry and Public Health. The high percentage share of Women specially in the field of Nursing (nearly 100%) thus increases their share in the field of Medicine. This is because of the non-availability of comparable data.

The study is confined to only recognised courses run by the Institutions affiliated to Universities or non-University organisations like Technical Boards or the concerned Department of State Governments. Students joining Non-Formal types of courses like Chartered Accountancy, Cost Accountancy, Company Secretariatship, AMIE, Correspondence Courses run by Universities of Boards etc. which do not come under regular system of Education are not covered in this study. This is also due to non-availability of data in respect of such type of courses. Besides a large number of short term as well as long term types of unrecognised courses like, Textile designing, Stenography, Boutique,

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*Views expressed by the author are his personal views and do not necessarily represent the views of the Ministry of Education and Culture.

Food preservation, etc. run by a number of Private Institutions are also not covered for this study due to non-availability of data.

Data and Methods Used

The study is based on the data published by Ministry of Education and Culture in its annual publication *Education in India.* The analysis has been made for four years namely 1960-61, 1965-66, 1970-71 and 1976-77 to study the trend of professional Education emerging during the last 15 years or so. However, Stage-wise analysis for undergraduate and post-graduate courses relates to the period 1965-66 to 1966-67 only due to the non-availability of comparable data for the year 1960-61.

Keeping in view the availability of data and its comparability over the period 1960-61 to 1976-77, the analysis is confined to the following Professional Courses only:

(i) Agriculture and Forestry
(ii) Commerce and Business Management
(iii) Education (Teachers Training)
(iv) Engineering, Technology and Architecture
(v) Journalism
(vi) Law
(vii) Library Science
(viii) Medicine
(ix) Music and Dance
(x) Oriental Studies
(xi) Physical Education
(xii) Social Work
(xiii) Veterinary Science
(xiv) Others.

Analysis and Results

Table 1 gives Women's Enrolment and their percentage to total enrolment during the period 1960-61 to 1970-71 in respect of 14 categories of Professional courses as already mentioned.

Comparing the growth of women enrolment in professional education with that of total enrolment, it may be seen that the percentage share of women enrolment to total enrolment in all types of professional courses has increased from 9.8% to 14.9% during the period 1960-61 to 1976-77. It increased from 9.85% to 13.85% during 1960-61 to 1965-66 but slightly decreased to 12.8% during 1965-66 to 1970-71 and again increased to 14.3% during 1970-71 to 1976-77. Thus it may be observed that Women have made a steady progress in the field of professional education with time.

The only professional course for which percentage share of women students to total number of students is more than 50% is Music and Dance (55.1%). The other popular professional courses among women when compared to their counterparts i.e. men are Social Work (41.4%), Education (40%), Library Science (36.9%), Journalism (29.3%), Medicine (24.5%) and Physical Education (23.3%).

The percentage share of women to total number of students (M+W) in the field of education has increased from 32.47% to 40% during 1960-61 to 1976-77, which implies that women share in the field of education (Teachers Training) is highly significant.

The professional subjects which are comparatively less popular among women as compared to men are Agriculture and Forestry (3.6%), Engineering, Technology and Architecture (6.3%), Law (5.8%) and Veterinary Science (1.8%). However it is encouraging to note that women's share has been gradually increasing in these non-traditional professional courses also. For example it may be seen that Women's share in the field of Commerce and B.M. has increased from 1.1.% to 9.9.% during 1960-61 to 1976-77.

Table 1

TOTAL NUMBER OF WOMEN STUDYING IN DIFFERENT TYPES OF PROFESSIONAL COURSES DURING THE YEAR 1960-61 TO 1976-77—(POST-MATRICULATION-AND-ABOVE)

Courses	*Number*				*Percentage to Total number of students (Men+ Women)*			
	1960–71	1965–66	1970–71	1976–77	1960–71	1965–66	1970–71	1976–77
1. Agriculture & Forestry	149	209	230	1,143	0·94	0·60	0·7	3·6
2. Commerce & Business Management	864	7,589	21,908	60,832	1·10	4·69	5·8	9·9
3. Education	15,202	57,776	62,972	71,964	32,47	36·13	34·6	40·0
4. Engineering, Tech. and Architecture	374	4,865	8,347	20,299	0·78	2·11	3·7	6·3
5. Journalism	*	*	*	139	*	*	*	29·6
6. Law	805	1,452	2,800	8,126	2·96	4·03	3·7	5·8
7. Library Science	*	*	*	859	*	*	*	36·9
8. Medicine	8,238	24,474	19,971	34,245	20·29	28·20	20·2	24·5
9. Music Dancing	*	5,560	5,519	6,676	*	52·18	46·8	55·1
10. Oriental Studies	*	1,569	2,838	6,252	*	6·52	9·0	15·0
11. Physical Education	159	694	917	1,378	17·59	20·49	21·2	23·3
12. Social Work	*	203	*	1,164	*	9·20	*	41·4
13. Veterinary Science	47	70	68	126	0·85	0·79	1·8	1·8
14. Others	286	982	12,426	2,788	1·75	14·29	42·6	23·7
All Professional Courses	26,124	1,05,443	1,37,996	2,15,991	7·85	13·80	12·8	14·3

**Included under Others.*

Source: "Education in India" Ministry of Edn. & Culture.

***Excludes Dentistry, Public Health, Nursing, Midwifery, Compounding and Pharmacy.*

Table 2 shows the comparative popularity for different professional courses for Women in comparison to total population (Men+Women) during the period 1960-61 to 1970-71. The comparative popularity has been worked out by working out the percentage distribution of women and total (Men+Women) enrolment in respect of 14 different categories. It may be quite evident to note that the popularity of professional courses differs widely for the two sexes. For women the most popular professional course is education (33.3%) (Teachers Training) followed by Commerce and B.M. (28.2%), Medicine (15.9%), Engineering, Technology and Architecture (9.9%). On the other hand the most popular professional courses among Men are Commerce and Business Management (40.6%) followed by Engineering, Technology and Architecture (21.3%), Education (11.9%) and Law (9.3%).

Subjects which are more popular among women in a comparison to men are Education, Medicine, Music and Dance, Oriental Studies, Physical Education and Social Work.

It may be interesting to note that Education accounts for nearly one third (33.3%) of the total women enrolment in all the professional courses. This is due to the fact that a large number of Women prefer for a teaching job in comparison to other type of professional jobs. This is true in Indian Society as women have to look after their home and children and teaching profession makes them available comparatively more time for their home and children. It is apparent when we observe that a large number of men prefer to marry a woman in teaching profession in comparison to other professions. However, it is encouraging to note that the percentage share of Women in Education has considerably decreased from 58.2% in 1960-61 to 33.3% in 1976-77. This is due to the increasing popularity of non-traditional subjects like Commerce and Business Management, Engineering, Technology and Architecture now being opted by Women. It is also due to the present employment market conditions under which high incidence of un-employment is noticed among teaching profession.

The percentage share of Medicine has also declined from 31.5 to 15.9 during the period 1960-61 to 1976-77. This may be due to the limited expansion of Public Health Sector during the last 15 years in comparison to the other sectors viz. Education, Industry and Trade etc.

The professional courses which have shown an increasing popularity among Women during the period 1960-61 to 1976-77 are Commerce and Business Management, Engineering. Tech., and Architecture, Law, Oriental Studies, Physical Education and Social Work. The details are given in Table 2.

Table 3 gives the percentage distribution of Women Enrolment and (Men+Women) Enrolment to Total Enrolment (Men+Women) in Professional Courses for the two stages namely undergraduate and postgraduate (Degree-Standard and above) during the period 1965-66 to 1976-77. It may be noted that percentage of women in postgraduate courses to their total enrolment is found to be comparatively lower vis-a-vis those for men, the only exception being Music and Dance and Veterinary Science.

It is an encouraging trend to note that for women, the percentage share of enrolment in postgraduate courses when compared to their total enrolment (undergraduate+postgraduate) has nearly doubled from 30.4% to 56.2% during the period 1965-66 to 1976-77 whereas the corresponding enrolment for Men and Women taken together has increased from 48.2% to 67.2% only during the same period. This implies that the women enrolment in postgraduate professional courses (degree and postgraduate level) has been growing at a faster rate in comparison to that for men.

Conclusion

With time, Indian women have been making steady progress in different types of Professional Courses. Women's share in Professional Education has increased both in absolute numbers as well as their percentage share to total enrolment (Men+Women).

Table 2

PERCENTAGE DISTRIBUTION OF WOMEN ENROLMENT AND TOTAL ENROLMENT IN DIFFERENT PROFESSIONAL COURSES DURING 1960-61 to 1976-77

Courses	1960–61		1965–66		1970–71		1976–77	
	Women	*Men & Women*	*Women*	*Men & Women*	*Women*	*Men & Women*	*Women*	*Men & Women*
1	2	3	4	5	6	7	8	9
1. Agriculture & Forestry	0·6	6·3	0·2	4·6	0·2	2·9	0·5	2·1
2. Commerce & Business Management	3·3	29·5	7·1	21·2	15·9	35·2	28·2	40·6
3. Education	58·2	17·7	54·8	20·9	45·6	16·9	33·3	11·9
4. Engineering, Tech. and Architecture	1·4	18·0	4·6	30·1	6·0	21·0	9·4	21·3
5. Journalism	*	*	*	*	*	*	0·1	0·1
6. Law	3·1	10·2	1·4	4·7	2·0	7·0	3·8	9·3
7. Library Science	*	*	*	*	*	*	0·4	0·2
8. Medicine	31·5	15·2	23·2	11·4	14·5	9·2	15·9	9·2
9. Music & Dance	*	*	5·3	1·4	4·0	1·1	3·0	0·8
10. Oriental Studies	*	*	1·5	3·2	2·0	3·0	2·9	·7
11. Physical Education	0·6	0·4	0·7	0·4	0·7	0·4	0·6	0·4
12. Social Work	*	*	0·2	0·3	*	*	0·5	0·2
13. Veterinary Science	0·2	2·1	0·1	0·9	0·1	0·6	0·1	0·4
14. Others	1·1	0·6	0·9	0·9	9·0	2·7	1·3	0·8
ALL PROFESSIONAL COURSES	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

**Included under Others.*

Sources : *"Education in India" Ministry of Education & Culture.*

N.B. : *Figures may not add to 100 exactly due to rounding of Figures.*

Table 3

PERCENTAGE DISTRIBUTION OF WOMEN ENROLMENT AND TOTAL ENROLMENT IN PROFESSIONAL COURSES BY STAGES DURING 1965-66 TO 1976-77

Courses	Women Total	1965–66			1970–71			1976–77		
		U.G.	P.G.	Total	U.G.	P.G.	Total	U.G.	P.G.	Total
1	2	3	4	5	6	7	8	9	10	11
1. Agriculture & Forestry	W	44·0	56·0	100·0	23·0	77·0	100·0	16·0	83·7	100·0
	T	26·4	73·6	100·0	20·4	79·6	100·0	10·0	90·0	100·0
2. Commerce & Business Management	W	76·9	23·1	100·0	69·0	31·0	100·0	24·2	75·8	100·0
	T	38·3	61·7	100·0	34·2	65·8	100·0	10·0	81·0	100·0
3. Engineering, Technology and Architecture	W	83·4	16·6	100·0	87·4	12·6	100·0	81·9	18·1	100·0
	T	61·2	38·1	100·0	58·9	41·1	100·0	64·4	35·6	100·0
4. Journalism	W	—	—	—	—	—	100·0	—	100·0	100·0
	T	—	—	—	—	—	100·0	—	100·0	100·0
5. Law	W	—	100·0	100·0	—	100·0	100·0	—	100·0	100·0
	T	—	100·0	100·0	—	100·0	100·0	—	100·0	100·0
6. Library Science	W	*	*	*	*	*	*	27·9	72·0	100·0
	T	*	*	*	*	*	*	18·5	81·5	100·0
7. Medicine	W	40·8	59·2	100·0	7·0	93·0	100·0	32·3	67·7	100·0
	T	28·0	71·0	100·0	10·2	89·0	100·0	15·4	84·6	100·0

Table 3 (*Contd.*)

1	2	3	4	5	6	7	8	9	10	11
8. Music and Dancing	W	76·6	23·4	100·0	74·6	25·4	100·0	50·7	49·3	100·0
	T	78·6	21·4	100·0	79·1	20·9	100·0	56·0	44·0	100·0
9. Education	W	81·5	18·5	100·0	56·4	35·5	100·0	56·7	43·3	100·0
	T	79·8	20·2	100·0	67·4	32·6	100·0	56·9	43·1	100·0
10. Oriental Studies	W	67·0	33·0	100·0	53·7	46·3	100·0	39·9	50·1	100·0
	T	58·9	41·1	100·0	52·8	47·3	100·0	46·5	53·5	100·0
11. Physical Eucation	W	74·5	25·5	100·0	76·9	23·1	100·0	46·7	53·3	100·0
	T	68·2	31·8	100·0	66·5	33·5	100·0	39·3	60·7	100·0
12. Social Work	W	29·6	70·4	100·0	*	*	*	23·9	76·1	100·0
	T	54·5	45·5	100·0	*	*	*	16·7	83·3	100·0
13. Veterinary Science	W	4·8	95·7	100·0	—	100·0	100·0	—	100·0	100·0
	T	14·7	85·3	100·0	3·3	96·7	100·0	4·3	95·7	100·0
14. Others	W	48·9	51·1	100·0	18·2	21·8	100·0	70·8	29·2	100·0
	T	46·4	53·6	100·0	54·1	45·9	100·0	69·5	30·5	100·0
ALL PROFESSIONAL COURSES	W or	69·6	30·4	100·0	58·4	41·6	100·0	42·8	56·2	100·0
	T	51·8	48·2	100·0	41·5	58·5	100·0	32·8	67·7	100·0

* *Included under Others.*

N.B. *W—Women Enrolment*

T— Total Enrolment

Source : Ministry of Education and Culture.

The structure of professional education is quite different for the two sexes. Women's first preference is Education (Teachers Training) whereas the corresponding first choice for Men is Commerce and Business Management. Besides Education account for nearly one third of the total Women enrolment in all the professional courses. Since opportunities for teaching jobs are limited especially in urban areas and women do not want to migrate to rural areas, there exists a high unemployment among qualified women teachers. This calls for a need to check women entry to teaching courses by controling the intake capacity of women teachers training institutions.

It is very encouraging to note that more and more number of Women have been joining different types of non-traditional professional courses like Commerce and Business Management, Engineering, Technology and Architecture and Law. In fact Commerce and B.M. is the most popular course among women after Education.

Women's share in all the professional courses of degree and above standard has been increasing at a faster rate in comparison to that for men with time. This has helped in, reducing disparities between the two sexes for postgraduate professional courses also, thereby making their appearance felt in high level jobs.

There is still a need to popularise different types of professional courses like Agriculture and Forestry, Law, Engineering Technology and Architecture for which Women's share is very low as compared to that for Men. This could be possible if Women are motivated to join these non-traditional courses with the help of powerful mass media like Radio, T.V. and Newspaper.

S.C. Seddey

PROFESSIONAL CHOICE BY UNIVERSITY STUDENTS: A SOCIOLOGICAL PERSPECTIVE

Service 'orientation' is the 'distinct' mark of profession. It is voluntary and dedicated act free from imposition by any external "authority' for the service of others. No doubt authority is needed to maintain discipline, but profession is guided by theoretical insight (the function of intellect) and controlled by the inner force of 'will' over the blind impulses. Being dedicated act 'profession' does not attach preference to 'ulterior' motives to gain prestige or money. Profession is based on an 'organized' body of well-defined courses to develop theoretical insight and competency to make the use of knowledge and skill for social cause as is the case with medicine and law. Profession is consisted of trained experts' who can play their 'specialist' role in society. On this basis 'profession' is distinguished from other 'vocations' and it is deemed to be the highest 'status' occupation.

Term 'choice' with reference to profession is an intellectual attack to 'examine' professional ethic i.e. the critical 'reflection' over the code of conduct which is not the same to all professions. For instance, an engineer is expected to show courage to express his views before senior colleagues, administrators and politicians. Pharase 'professional choice' implies training of intellect and will. Intellect is needed to understand the professional ethic; 'will' the power of mind to take decision. 'Will' is needed to make the free use of knowledge without any external restriction or imposition. It will determine the character of profession as voluntary and dedicated act to serve others.

Basic Issues

Theoretical insight or expert knowledge and its free 'use' with the spirit of 'service' for the betterment of the others are the main characteristics of 'profession'. To attain the deeper level of understanding in various fields of learning is the concern of university and intellectual elite. It emerged into main issues which are relevant to the problems in secular India. These are as under: (i) is University meant for professional elite, masses or for both; (ii) is University a workshop or a training Centre.

Categorically, nothing can be said in favour of the either of the two. Favour of professional elite will violate 'secular' conviction i.e. the extension of the gains of education to the maximum number. The favour of 'masses' will violate the spirit of profession as well as that of university. For 'masses' cannot surpass the level of common sense and are short sighted and they can't see things in wider 'perspective' to act for the betterment of others. The moderate answer is given in favour of professional who always have in view the interest of the client. He is socially dependent on others to attain the status of profession. In this sense he will satisfy the secular demands and the university is the fittest place to produce professionals.

The second issue emerged in relation to medical or technical education. For medical degree requires vocational training The fittest answer is that pre-medical requires to pursue permanent academic interests and involvment of mind. University may be a place for vocational education, with its attribute of 'expert knowledge', should not be identified with 'work-shop' or training centre. Vocational education aims at three things as under: (i) the learner should be made conscious about his abilities; (ii) to inculcate the 'specialized' knowledge to meet the requirement of diversified specialized jobs; and (iii) to make him aware about the absorbing capacity of the developing country like contemporary India.

This is essential to make the appropriate use of knowledge and skill and to make education 'useful' or to avoid the misuse of education.

Criterion of Professional Choice

Advances in the filed of science and its technology had impact on industry and agriculture to effect the mode of production. As a result the main feature of the present 'civilization' is known as production economy or material rather than moral and spiritual. The modern man is going to be more and more near to things and objects and going away from mind and spirit. The reason is the character of production economy necessitates to keep the balance between production and consumption i.e. the use of modern industrial goods. It emerged into a disposition known as 'achievement orientation' an urge to produce more and more. It encourages social jealousy, selfishness, individualism and competition beyond its normal limits in society. Ultimately, results into social conflict and envy the root of all social evils. It is obvious 'achievement orientation' creates confusion about the real aim of mass production which should be utilized by masses to promote social good. It implies consideration for the 'service' of others and service 'orientation' becomes vital in case of professionals.

Thus the professionals should be aware about his professional ethic i.e. the critical examinations of code of conduct. The professional ethic should be taken as evaluative standard to evaluate rational choice of would be professions. Lack of it is the indication that 'choice' is either arbitrary i.e. without giving serious thought to it or it is imposed by the authority of either parents or teachers or merely accidental.

Aims of the Study

The study aims at as under:

(i) to ascertain 'appropriate choice' of professions; and
(ii) to ascertain the younger generation's trend towards would be vocation.

With reference to professional choice term 'appropriate' stands to chose profession on the basis of knowledge and training which will enhance efficiency and quality of work. It is the basic to promote personal well-being and social welfare, the care of social development i.e. the qualitative change in social structure. Appropriate choice is the requirement of democratic social system which provides number of 'alternatives' and lack of it will lead to develop neauratic tendency which will adversally effect the development —both at personal and social levels. From academic point of view the study will highlight the utility and the unique place of each discipline to serve the purpose of life, society and individual; as each discipline is the expression of human experience.

The study has its sociological, psychological and ethico-cultural significance and has its justification. Sociologically, it is a move from 'ascribed role' to 'achieved role' and will emerge into 'new class' which is the indication of social development. (ii) Psychologically there is truth in saying: he who thinks what is 'doing' is bound to be a good operative. As it will develop positive attitude towards sustained hardwork which determine both achievement and success in life. Knowledge of professional ethic will enhance the power of professional man, by giving him professional right and privilege. Act with service orientation will lead to the building of national culture i.e. faith in 'secularism' the expression of true brother-hood. The knowledge about the future trend with respect to choice of professions will help to formulate educational planning and policies on facts and evidences. The study was conducted by developing the following hypotheses: (i) University students who are intellectually mature are capable to make appropriate choice; and (ii) Students responses should not vary 'significantly'.

Methodology

To realize the forestated aims of study, Panjab University, Chandigarh (being oldest traditional University in state with a stress on teaching and research) was purposely selected.

With the help of Employment Officer, Panjab University, Chandigarh and research scholars from the various teaching departments; a detailed list of professions was prepared. Out of this list fifteen professions were selected for study purpose. It was done keeping in view research the innovation of new ideas; teaching to communicate knowledge about each discipline and to improve the quality of mind and social relations; administration which deals with 'action' and those professions deal with the practical aspects of life are deemed to be the core of civilization viz., agriculture, banking and business.

The study sample comprised 183 students of final year students, who will immediately enter into profession, from all the departments. It was depending on the availability of students. The sample has been divided into two groups on the basis of sex and faculty-wise.

The data were collected through survey method based on specially designed schedule. Questions were prepared in simple language to seek the opinion on 15 professions. Each respondent was asked to give three preferences i.e. first, second and third for each profession listed therein. These preferences alloted three, two and one mark(s) respectively. In this way weighted scores were calculated. The percentages were also calculated. Chi-square test was applied to test the significance between the expected and the observed responses. It will indicate the appropriate choice. Students 't' test was also applied to determine the significance of difference among the group of students on the basis of male v/s female and the humanity v/s science.

Analysis and Discussion

An attempt was made to distribute the sample students and to study their preference for various professions, the result are shown in Table 1.

The analysis reveals the results as under:

(i) With respect to first preference top priority was given to IAS and no preference to Politics. Art, Law, Agriculture, Military and IPS are at the bottom. (ii) With respect to second preference top priority was given to University teaching and Art, Agriculture and journalism were placed at the bottom. (iii) With respect to third preference top priority is given to University teaching and Politics and IPS were at the bottom. (iv) The weighted score was highest in favour of IAS. (v) Chi-square value was significant at one per cent level of confidence.

Table 1

DISTRIBUTION OF SAMPLE STUDENTS AND THEIR PREFERENCE FOR PROFESSIONS

S.No.	*Profession/Preference*	*Preference* 1	2	3	*Weightage score*	*Chi-Square*
1.	Research	30 (16·29)	17 (9·29)	21 (11·48)	145	
2.	Journalism	5 (2·73)	5 (2·73)	7 (3·82)	32	101·75
3.	University Teaching	29 (15·85)	31 (16·94)	23 (12·67)	172	Df 28
4.	Art	3 (1·64)	2 (1·09)	4 (2·19)	17	Significant
5.	Social Service	4 (2·19)	22 (12·02)	15 (8·20)	71	at 1%& 5%
6.	Politics	1 (0·55)	5 (2·73)	2 (1·09)	15	Levels
7.	Law	2 (1·09)	4 (2·19)	7 (4·92)	23	
8.	IAS	55 (30·05)	11 (6·01)	18 (9·84)	205	
9.	IPS	3 (1·64)	9 (4·92)	2 (1·09)	29	
10.	PCS	20 (10·93)	11 (6·02)	7 (3·82)	89	
11.	Military Service	3 (1·64)	6 (3·28)	4 (2·19)	25	
12.	Foreign Service	7 (3·83)	15 (8·20)	15 (8·20)	66	
13.	Business	6 (3·28)	7 (4·92)	11 (6·01)	47	
14.	Banking	5 (2·73)	10 (5·46)	17 (9·29)	52	
15.	Agriculture	2 (1·09)	3 (1·64)	12 (6·55)	24	
16.	Indifferent respondents	8 (4·37)	23 (12·56)	16 (8·74)		
	Total	183 (100)	183 (100)	183 (100)	1,012	

Figures in parenthesis indicate percentages.

The deeper analysis of the trend of students revealed that there is little change in the colonial values and attitudes towards profession.

In colonial period ICS equivalent to IAS was given importance as compared with other occupations. The same are the results under changing situation. In colonial period the same was the position of politics and the police which were not enjoying good reputation. The significance of Chi-square means the choice is not appropriate and there is a gap between theory and practice.

An attempt was made to study preferences to various professions on the basis of the male v/s female, the results are shown in Table 2.

The analysis of the table revealed the result of the male are as under: (i) With respect to first preference top priority was given to IAS which was followed by research and the male students gave equal importance to University teaching and PCS. (ii) No response was given to Politics and Banking. (iii) Art, Law and Agriculture were placed at the bottom. (iv) With respect to third preference research and University teaching were given equal importance. The weighted score in case of IAS was the highest.

In case of the female the results were as under: (i) With respect to first preference top priority was given to IAS followed by University teaching and research. (ii) There was no response in favour of Military Service and Teaching. (iii) With respect to second preference University teaching was at the top and followed by Social Service. No response was given in favour of Military Service and Agriculture. (iv) With respect to third preference equal importance was given to IAS and Social Service. The weighted score was highest in favour of IAS.

On the basis of sex, difference of responses was not significant as to 't' value was not significant.

An attempt was made to study the preference to various professions on the basis of the humanity students v/s science, the results are shown in Table 3.

Table 3 reveals the results as under: (i) In case of the humanity students with respect to first preference top priority was given to IAS which was followed by University teaching. (ii) Art, Agriculture and Politics were at the bottom. (iii) With respect to second preference top priority was given to University teaching. (iv) With respect to third preference Social Service and University teaching are given the same importance. (v) The weighted score of IAS was the highest. In case of Science students the results are as under: (vi) With respect to first preference top priority was given to research followed by IAS. (vii) No response was given to Politics, Law and Business. (viii) With respect to second preference research and University teaching were given equal importance which was followed by foreign service. (ix) With respect to third preference top priority was given to research.

The weighted score in favour of research was highest.

On the basis of faculty difference of response was not significant as the 't' value was not significant.

An attempt was made to study the distribution of University students according to their awarences about Professional ethic. The results are shown in Table 4.

The table reveals the results as under: Out of the sample students about 20 per cent students are aware about the professional ethic. The same is the picture in case of male v/s female and the humanity v/s science students respectively. It is the indication that the choice is 'arbitrary' i.e. without proper deliberation (or the exercise of reason).

Conclusion and Suggestions

On the basis of forestated facts the following conclusions can be drawn:

A. (i) the trend of responses favours IAS as the weighted score is the highest. It also indicates that responses are not appropriate;

(ii) responses indicate that second place is given to university research and teaching;

(iii) no response is given in favour of politics;

(iv) art, law, agriculture and IPS are at the bottom.

Table 2

SEX-WISE DISTRIBUTION OF RESPONDENTS AND THEIR PREFERENCE FOR PROFESSIONS

S.No.	Profession/Preference	Sex																
		Preference (Male)								Preference (Female)								
		First		Second		Third		Weightage	%age	First		Second		Third		Weightage	%age	D1
		No	%	No	%	No	%	score	score	No	%	No	%	No	%	score	score	
1.	Research	16	18·60	11	12·79	13	15·12	83	16·08	14	15·73	6		8	9·88	62	12·50	−3·58
2.	Journalism	3	3·49	4	4·65	2	2·33	19	3·68	2	2·25	1		5	6·17	13	2·62	−1·06
3.	University Teaching	10	11·63	13	15·12	13	15·12	69	13·37	19	21·35	18		10	12·35	103	20·77	4·40
4.	Art	1	1·16	0		1	1·16	4	0·79	2	2·25	2		3	3·70	13	2·62	1·83
5.	Social Service	3	3·49	6	6·98	4	4·65	25	4·84	1	1·12	16		11	13·58	46	9·28	4·44
6.	Politics	0	—	3	3·49	0	—	6	1·16	1	1·12	2		2	2·47	9	1·81	0·65
7.	Law	1	1·16	0		5	5·81	8	1·55	1	1·12	4		4	4·94	15	3·02	1·47
8.	I A S	28	32·56	4	4·65	7	8·14	99	19·19	27	30·34	7		11	13·58	106	21·37	2·18
9.	I P S	3	3·49	8	9·30	1	1·16	26	5·04	-		1		1	1·23	3	0·60	−4·44
10.	P C S	10	11·63	6	6·98	6	6·98	48	9·30	10	11·24	5		1	1·23	41	8·27	−1·03
11.	Military	3	3·49	6	6·98	2	2·33	23	4·46	-		-		2	2·47	2	0·40	−4·06
12.	Foreign Service	3	3·49	9	10·47	10	11·63	37	7·17	4	4·49	6		5	6·17	29	5·85	−1·32
13.	Business	4	4·65	5	5·81	9	10·47	31	6·01	2	2·25	4		2	2·47	16	3·23	−2·78
14.	Banking	0	—	8	9·30	5	5·81	21	4·07	5	5·62	2		12	14·82	31	6·25	2·18
15.	Agriculture	1	1·16	3	3·49	8	9·30	17	3·29	1	1·12	0		4	4·94	7	1·41	−1·88
		86	100	86	100	86	100	516	100	89	100	74		81	100	496	100	

t value = 0·266

Table 3

FACULTY-WISE DISTRIBUTION OF RESPONDENTS AND THEIR PREFERENCE FOR DIFFERENT PROFESSIONS

S.No.	Profession/Preference	*Faculty*																
		The Humanity Preference								*Science Preference*								
		First No	*%*	*Second No*	*%*	*Third No*	*%*	*Weighted score*	*%age*	*First No*	*%*	*Second No*	*%*	*Third No*	*%*	*Weighted score*	*%age*	D_1
1.	Research	7	7·00	7	7·69	5	4·85	40	6·84	23	30·66	10	14·49	16	25·00	105	24·59	–17·75
2.	Journalism	4	4·00	3	3·30	4	3·88	22	3·76	1	1·33	2	2·90	3	4·69	10	2·34	1·42
3.	University Teaching	20	20·00	21	23·08	13	12·62	115	19·66	9	12·00	10	14·49	10	15·63	57	13·35	5·31
4.	Art	1	1·00	1	1·10	4	3·88	9	1·54	2	2·67	1	1·45	–		8	1·87	–0·33
5.	Social Services	2	2·00	8	8·79	12	12·62	35	5·98	2	2·67	14	20·29	2	3·12	36	8·43	–3·55
6.	Politics	1	1·00	5	5·49	2	1·94	15	2·56	–		–		–		–		2·50
7.	Law	2	2·00	4	4·40	8	7·77	22	3·76	–		–		1	1·56	1	0·23	3·53
8.	I A S	35	35·00	4	4·40	11	10·68	124	21·20	20	86·67	7	10·14	7	10·94	81	18·97	2·23
9.	I P S	2	2·00	8	8·79	2	1·94	24	4·10	1	1·33	1	1·45	–		5	1·17	2·93
10.	P C S	9	9·00	5	5·49	4	3·88	41	7·01	11	14·67	6	8·70	3	4·69	48	11·24	–4·23
11.	Military	2	2·00	2	2·20	–		10	1·71	1	1·33	4	5·80	4	6·24	15	3·51	–1·80
12.	Foreign Service	5	5·00	7	7·69	8	7·78	37	6·32	2	2·67	8	11·59	7	10·94	29	6·79	–0·47
13.	Business	6	6·00	8	8·79	9	8·74	43	7·35	–		1	1·45	2	3·12	4	0·94	6·41
14.	Banking	3	3·00	7	7·69	11	10·68	34	5·82	2	2·67	3	4·35	6	9·38	18	4·22	1·60
15.	Agriculture	1	1·00	1	1·10	9	8·74	14	2·39	1	1·33	2	2·90	3	4·69	10	2·35	–0·04
		100		91		103		585	100·0	75		69		64		427	100·0	

t value = 0·0988

Table 4

DISTRIBUTION OF SAMPLE STUDENTS AND THEIR AWARENESS ABOUT PROFESSIONAL ETHIC

	Yes	*No*	*Total*		*Yes*	*No*	*Total*
Male	19 (19·8)	77 (80·2)	96 (100)	The Humanity	21 (19·2)	88 (80·8)	109 (100)
Female	17 (19·5)	70 (80·5)	87 (100)	Science	15 (20·3)	59 (79·7)	74 (100)
Total	36 (19·7)	147 (80·3)	183 (100)	Total	36 (19·7)	147 (80·3)	183 (100)

Figures in parenthesis indicate percentage of the total.

B. The Comparison between male v/s female is as under:
  (i) top most importance is given to IAS and no importance is given to politics and banking by both the sexes.
  (ii) the male students attach little importance to politics, art and law, and the female students attach little importance to IPS and military.
  (iii) the diffeence of responses, on the basis of sex is not statistically significant as the 't' value is not significant.

C. The comparison between the humanity and science is as under:
  (i) the responses of the humanity group favour IAS and science students favour research.
  (ii) the difference of responses on the basis of the humanity v/s female is not statistically significant, for the 't' value is not significant.

The chi-square value in case of sample students is highly significant. It means the responses between the expected and the observed are not conugument. It means the responses are not according to the knowledge gained in respective subjects.

Majority of the students (80 per cent) are not aware about the 'professional ethic' to be taken as the basic criterion or evaluative standard to evaluate choice. Hence, it is obvious the choice is arbitrary not deliberate one or it is imposed on students either by parents or by teachers. The supposition that university students being intellectually mature are capable to make appropriate choice i.e. on the basis of knowledge and skill attained at the places of learning has been rejected. Responses indicate the gap between theory and practice which need to be abridged in the post-independent India.

The above stated conclusions can be interpreted as under:

On the basis of a single research study conducted at certain place and point of time scientific generalization is not possible which is the limitations of empirical research. With this, socialogically the trend shows alarming picture, i.e. there is little change of value in changing situation (preindependent and post-independent India). For in colonial days ICS which is now equivalent to IAS was considered prestige job and the police was also not enjoying good reputation. The similar was the case with politics and agriculture which is the core of civilization.

Changing situation, when each one is given right to vote, it necessitates to take interest in politics as the group of politicians is the most powerful in decision making process. The fact about students lack of interest in politics can be interpreted in two ways:

(i) it will encourage that second rate people to enter into politics;

(ii) ultimately the result would be that some families will have their monoply over it. It will violate the secular cum democratic spirit and it will hinder the true social development. The trend provides stimulus that; administrators, politicians and the teachers should have a serious note of it which is the national urgency. Teachier's role is significant in the process of education.

The teachers while communicating the knowledge of the 'subject matter' should stress the practical 'utility' of the knowledge to life, society and individual. Each discipline being the expression of human experience has its 'unique' place in life about which the students must be made aware. To inculcate this type of consciousness in the age of specialization and corresponding diversification of jobs is essential to meet specialised job requirements. For this reason the teachers alongwith administrators have a say to change the curriculum to meet the social demands. Teachers should help the students to realize the unique place of each discipline from theory and practice point of view. They should not only teach the subject-matter in the mechanical form but also help them to take up the 'rational' view by taking decision about future vocations and to inculcate positive attitude to act with commitment by attaching certain values to profession. It is essential as choice is an intellectual attack on the problem. Intellect in itself is passive and not active.

Ujagar Singh

STUDENTS. PARTICIPATION IN THE MANAGEMENT OF EDUCATION SYSTEMS: A PRELIMINARY ANALYSIS OF EMERGING TREND IN INDIA*

The term 'Management' is generally viewed as that activity in an organisation which consists in deciding upon the goals and objectives and the ways or means by which they are to be effectively achieved. Educational institutions embrace numerous objectives, successful attainment of which is largely dependent on their functional organisations. In the present era, educational institutions occupy a significant role in the society. The progressiveness of a social system is the outcome of the worked out principles of the organised educational institutions, as education and society are not only interrelated but are interdependent too. Therefore, it becomes the responsibility and obligations of the educational organisations to be able to cater and cope with the changing needs and demands of its internal system and the environment, as well.

Evidently, owing to various changes that have taken place in both the educational as well as the social systems in the recent past, the nature of relationship between them have also been affected. Various changing phenomenon like the rapid and disproportionate growth in size of students, teachers and administrative staff; introduction of new curriculum, teaching techniques and evaluation system; teacher-student relationship; students' demand for participation in the management activities of their institutions, etc., which have come on to the surface lately are explicitly affecting the smooth functioning of the educational organisations. As a result, educational institutions at various levels are in general facing acute crisis of governance. Thus, an immediate task before this set of organisations is to search for a helping mechanism in order to tackle the emerging problems and thereby attain a smooth functional procedures. The need for application of modern management principles is well recognised today and therefore, the utility of an effective management system has become evident at this juncture. It has also been revealed that unless a consistent structural and its corresponding functional systems are developed and established within the framework of an educational institution, even a streak of successful achievement of its objectives can never be hoped for.

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The Background

In an earlier article[1] it was argued that education systems being open systems need a two fold strategy for effectively managing themselves. The concept of Management of education systems therefore, envisages that there should be one strategy for controlling problems of the internal system i.e. the problems of the students, teachers and administrative staff; and another strategy for coping with the problems from outside the system i.e. interface problems, emerging from the process of transactions between the system concern and its environment (the Government, political system, and at large the community). However, the same effort further recognised that the management of internal system primarily demands attention in mainly four areas i.e. (i) Management of Financial resources; (ii) Academic management; (iii) Developing organisation structure; and (iv) Management of Human resources. In the present context it needs to be emphasised that the management of human resources is the most important and crucial in comparison to other three areas identified in the task of effective management of education systems in the country.

Further, a glance at the available literature in this field would reveal the fact that the most potent source of lack of organisation in an educational institution stems from the communication gap among the members of its major sub-systems i.e. the students, faculty members and administrative staff. In addition, almost in every educational institution a general trend of negative attitude towards each other is observed and this in turn results in the growing sense of cynicism and mistrust on the part of both the teachers and students utlimately causing a "relationship problem" between them. Owing to the changes in the basic values guiding the process of education, the student-teacher relationship has now shifted from the "moral" to the "alienative" and "calculative" types. The present student generation goes to the university not with the 'moral' aim of learning, but because of the parental or social pressures and thus are found to be heading for alienation. Moreover, they consider the process of education primarily as the mode of achieving the means of better living. Under this kind of a situation they can not retain the sense of respect and submissiveness to the 'authority-position' of the teachers. As a consequence, faculty members too exhibit a pattern of negative defensive behaviour towards the student community in order to cope with the latter's attitude of 'non acceptance'. Having the defensive reaction to maintain their sense of superiority, the teachers view the students as transients in the system and voluntary consumers of the services rendered by them.

On the other hand, it has been observed[2] that both the students and the faculty are dissatisfied with the manner in which the administrative system functions in the academic institutions. Efforts have also been made[3] to locate the important areas of students' dissatisfaction over the university affairs which they strictly attribute to the negligence in the performance of the administrator's role. Such areas are:

(i) Student discontent with the university priorities, unresponsive faculty, rigid and non-relevant curriculum and other facets of the life and policies of the university and other education systems;
(ii) Administrative exhaustion from the chronic strains of managing today's crisis while anticipating tomorrow's; and
(iii) Polarization of Professors over the role of the student in university affairs.

In addition, administrative staff receives the blames from the faculty members, who always held the former responsible for all the failures and troubles that arise in an educational institution. The lack of understanding between the faculty members and administrative staff again is found to rest on the fact where faculty members oppose in considering students as a part of the total educational organisation. As a major source of income, however, students are considered by the administrative staff as the essential part of the organisation. Moreover, the joint negative attitudes of the students and faculty members towards the administrative staff get reflected in their consideration of administrative staff being inefficient, indifferent, radical and/or reactionary. In the institutional sphere, the administrative staff appear to the rest of the community as the first line representatives of the establishment, while at the outside they are accepted as "all those radicals at the university."[4]

It is, therefore, clearly evident that the root of disorganisation in educational organisations is located in the nucleus of misunderstanding and non-cooperation among the members of its major sub-systems. The fact implies that reorientation in viewing the problems of educational organisation has become essential today. As indicated earlier that though the education systems being open systems are exposed to lot of interface problems and environmental threats, the major source of problems however, is found to be embedded in their own internal systems. Application of participative principles of management therefore, seemed to be the best measure to cope with the prevailing situation in the educational organisations. In order to overcome the implicit problems of non-cooperation and communication gap within the major sub-systems of the educational institutions, participation by the members of each level of the organisation in taking up the institutional decisions seems significant. As against the practice of the present, i.e. the faculty members along with the administrative staff are seen more participative in deciding anything and everything regarding the university affairs, participation of the students appears to be more significant and relevant at this juncture.

The Study

The present article is the outcome of a preliminary survey conducted among a set of instituions to explore the fact that whether the awareness regarding the students' participation in the management of these education systems (SPMES) is existing or not. Besides, the survey also made efforts to generate data on such issues like Span of Existence of the SPMES and Areas of Participation for those institutions where the scheme is in existence and whether students' demand for SPMES is there or not in case of the other institutions.

Different types of institutions like the State and Central Universities, Krishi Viswa Vidyalaya, IITs, Agricultural Universities and other Centres of higher learning scattered over the different states of the country constitute the sample of the present study. Thirty four institutions out of 81 covered, responded to the questionnaire and on the basis of their responses, relevant observations could be made regarding students' participation in the Governance of education systems in the country. These educational institutions are located in fifteen states (i.e. West Bengal, Bihar, Andhra Pradesh, Gujarat, Himachal Pradesh, Madhya Pradesh, Maharashtra, Haryana, Uttar Pradesh, Orissa, Assam, Karnataka, Kerala, New Delhi and Rajasthan) of the country. In terms of type of management or nature of control systems adopted by these institutions, they have been found to cover specified types of State Government, Autonomous Body, Central Government, Private boyd, Semi-Government, Statutory body and Private Statutory body. The sample institutions include both the technical and non-technical types. This categorisation is based on the bare fact that the technical institutions are those which offer professional courses in Agriculture, Engineering, Medicine, Management, Fine-arts, etc; whereas the traditional institutions offering courses in arts, science and commerce have been classified as non-technical institutions. It has been revealed that there exists a significant variation in the distribution of technical and non-technical institutions over the different types of management or controlled systems, as indicated earlier. Table 1 below brings home this fact.

A short questionnarire was designed for this survey to probe into a few structural and functional dimensions of the educational institutions. The said questionnaire attempted

Table 1

DISTRIBUTION OF THE TYPE OF INSTITUTIONS (TECHNICAL—NON-TECHNICAL) OVER THE TYPES OF CONTROL SYSTEMS

Sl.No.	*Type of Control*	*No. of Institution*	*Type of Institution*	
			Technical	*Non-technical*
1.	Central Government	5	4 (22·22%)	1 (6·25%)
2.	State Government	10	4 (22·22%)	6 (37·50%)
3.	Autonomous Body	15	9 (50·0%)	6 (37·50%)
4.	Others*	4	1 (5·56%)	3 (18·75%)
	Total	34	18 (52·94%)	16 (47·06%)

**Include Semi-Government, Private, Statutory and Private Statutory control.*

to explore relevant data among others, on size of the institution, type of management, whether SPMES exists or not, areas of participation, and so on.

Some Observations

The obtained data indicated that the general trend towards the students' participation in the management of education systems is almost an established fact in majority of the educational institutions covered by the present survey. A glance at the Table-2 below will indicate that irrespective of the variation in the size of the institutions, regional locations, etc., 64·71% out of 34 institutions had been found to have well established mechanisms for students' participation in the management of their respective educational systems. It has also been observed that irrespective of type of control systems of the institutions studied, majority of them have been found to be encouraging students' participation in the governance of their own institutions.

Table 2

TYPE OF CONTROLWISE DISTRIBUTION OF THE INSTITUTIONS SHOWING WHETHER SPMES EXISTS OR NOT

Sl.No.	*Type of Control*	*No. of Institution*	*SPMES Exists*	
			Yes	*No*
1.	Central Government	5	4	1
2.	State Government	10	6	4
3.	Autonomous Body	15	9	6
4.	Others	4	3	1
	Total	34	22 (64·71%)	12 (35·29%)

With regard to the duration or span of existence of the scheme of students' participation in the 22 institutions, analysis of relevant data reveals that such a phenomena has been of rather recent origin (in practice for the past five to ten years or so) in most of these institutions. Nevertheless, a few of the institutions covered by the present survey have also been found to encourage students' participation for quite long time. Table 3 highlights all these features regarding the development of the phenomena of students' participation in the educational scene of the country.

Table 3

SHOWING SPAN OF EXISTENCE OF STUDENTS' PARTICIPATION IN THE EDUCATIONAL INSTITUTIONS

Sl.No.	*Type of Control*	*Total no. of Institutions*	*Span of Existence of SPMES*			
			5 years & below	*6–10 years*	*11–15 years*	*Above 15 years*
1.	Central Government	4	1	2	–	1
2.	State Government	6	4	–	2	–
3.	Autonomous Body	9	4	4	–	1
4.	Others	3	1	2	–	–
	Total	22	10 (45·45%)	8 (36·36%)	2 (9·09%)	2 (9·09%)

Further, it has been revealed that where SPMES is an accepted norm of management, the areas of students' participation have been found to vary from one instituton to the other. Apart from the differences in the type, location, nature of courses offered by the institutions, etc., the present analysis indicates that variation exists in the areas of students' participation ecompassing areas like Senate, Syndicate, Academic Council or Board of Studies, etc. (Key areas) and Library Committee, Canteen Committee, etc. (Non-key areas). Some other areas of participation however, had also been indicated by some institutions covered by this survey. The following table attempts to reflect the nature of variation in respcet of key and non-key areas of students' participation in the institutions under varied types of control or management systems.

Table 4

INDICATING VARIATION IN THE KEY AND NON-KEY AREAS OF STUDENTS PARTICIPATION

Sl.No.	*Type of Control*	*Total no. of institutions*	*Students' Participation in*	
			Key Areas	*Non-Key Areas*
1.	Central Government	4	2	5
2.	State Government	6	7	4
3.	Autonomous Body	9	10	9
4.	Others	3	3	5

Yet another significant feature observed in this respect is that students' participation is typically found to be operative around the key administrative areas like Senate, Syndicate, Academic Council, etc. and some unspecified independent (Non-Key) areas of management of education systems. However, no information indicating students' participation in the committees or councils dealing with the affairs of examinations was obtained by the present survey. Administrative or Policy making bodies like Senate, Syndicate or Academic Council as relatively preferred area of students' participation might be due to the fact that sense of power and authority along with social prestige is more associated with this level of dicision making bodies of the educational organisations. Moreover, students' aspirations for taking part in some other areas of management activities, independent of a particular institution, may be considered as dependent on the situational needs and demands of the concerned educational organisation. Table 5 provides a detailed picture regarding the areas of students' participation in the management activities of the institutions covered by the present survey.

Table 5

DISTRIBUTION OF INSTITUTIONS IN TERMS OF AREAS OF STUDENTS' PARTICIPATION IN THE MANAGEMENT OF EDUCATION SYSTEMS

Sl. No.	*Type of Control*	*Total No. of Institutions*	*Areas of Students' Participation*						
			Senate	*Syndicate*	*Academic Council Board of Studies*	*Exam. Council*	*Library Committee*	*Canteen Committee*	*Unspecified Areas*
1.	Central Government	4	–	–	2	–	1	3	1
2.	State Government	6	3	1	3	–	1	1	2
3.	Autonomous Body	9	6	1	3	–	2	2	5
4.	Others	3	2	–	1	–	–	2	3

Finally, one more interesting feature revealed by the present study is that the demand for students' participation in the Institutions where SPMES is still an unobserved phenomena, was found only in few of them. Analysis of relevant data on this crucial issue indicated that 75% of the educational organisations where the management system does not include or encourage students' participation, do not experience any such pressure from the students (see table 6). In other words, the observation made above tends to suggest that where SPMES is not in existence today, there is also surprisingly no demand apparently for such a change in their management systems.

Emerging Trend

This article makes a preliminary attempt to throw some light on certain aspects of students' participation in the management of education systems. Evidently, its outcomes are not too much indicative and predictive of the prospects and consequences of the phenomena, under study. Nevertheless, it may be accepted as the building block for further

Table 6

SHOWING STUDENTS' DEMANDS FOR PARTICIPATION IN THE MANAGEMENT OF EDUCATION SYSTEMS

Sl.No.	*Type of Control*	*No. of Institutions*	*Demand for SPMES*	
			Yes	*No*
1.	Central Government	1	–	1
2.	State Government	4	1	3
3.	Autonomous Body	6	1	5
4.	Others	1	1	–
	Total	12	3	9

research for exploring thoroughly and providing all concerned with detailed picture of the total field together with numerous thought provohing angles, relevant to this phenomena.

To briefly recapitulate, it has been observed that the scheme for Students' Participation is in existence over the past 5 to 10 years in almost 65% of the educational instituiions covered by the present investigation. Although the students in general were reported to be more inclined to take part in the key decision making bodies (e.g. Senate, Syndicate, Board of studies, etc.), complete reservations regarding their participation in the councils/committees dealing with the affairs of examination was also clearly indicated. Yet another significant feature revealed in this reagard is that students rarely demand for taking part in the various management activities of those institutions where such a scheme has not been put in to effect, so far.

In sum, it may be pointed out that the significance of the findings of this preliminary study ultimately lies in the acceptance of the role of students' force as an inherent aspect of the total organisation of the educational institutions. If students resources—the energy, freshness, and vigour of their youth are utilised properly, smooth functioning as well as advancement of the educational institutions will take place automatically, ultimately resulting in the improvement and enlightment of the society.

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Swaraj Bandyopadhyay and Nilanjana Kundu

PRODUCTIVITY TRENDS IN CORRESPONDENCE EDUCATION*

To assets the productivity trend in any system of education is difficult and it is because of this fact that despite the current interest in productivity measurement, very little is known about the productivity of the educational system, one of the largest sectors of modern economy. A few attempts in the past have been made to assess the productivity of the educational system** and the researcher has taken help from these sources for the present study.

The purpose of productivity measurement is to provide a yardstick of economic efficiency in different time periods for individual firm within an industry, or for an industry as a whole, For the present study the one industry selected is the 'Correspondence Education—Industry' & one individual firm in it, 'The centre of Correspondence Studies, University of Rajasthan, Jaipur'. To know yardstick of economic efficiency the time period selected is, from 1968-69 to 1976-77.

There are various dimensions of judging efficiency of a system such as the fulfilment of the purpose it purports to fulfill, the efficiency of the technology followed, the efficiency in the production of the output etc., for the present study the third dimension namely 'Efficiency in the production of its output' has been adopted.

In order to assess the efficiency in production it is required to estimate the total factors productivity which can be calculated by assessing following:

(1) To define and measure all inputs & outputs in quantitative terms.
(2) To isolate variations in the quality of both inputs and outputs and express them in standard terms.
(3) To combine the various inputs & outputs.

The first problem in considering the education industry is to define output. What is the end product of a period of schooling. One of the peculiar features of the universities is that they represent a vast multi-product industry. Furthermore, the final product is intangible, and at first sight, incapable of being quantified. Various solutions are offered such as value adjusted by price Indes, to use expenditures or inputs as proxy measure of output etc. Each has its merits and demerits; for the present study the end product has been taken to be simply a degree. The same procedure has been adopted by the economists in past.

The definition of inputs involve fewer conceptual problems Inputs of universities include the expenditure incurred on meeting teacher and establishment cost and other recurring and non-recurring expenses.

Thus, for assessing total productivity some standard basis of measuring Input and Output has to be derived. For the present study the basis selected has been to prepare indexes for both. Two types of indexes are to be calculated, one for measuring changes in the output and the other for measuring changes in the input As mentioned earlier the measurement of input does not involve much difficulties as its components are well known & standardised, but the measurement of output creates much trouble, this is so because there are three ways of assessing productivity:

(1) By calculating Economic Index.
(2) By calculating Cultural Index.
(3) By calculating Academic Index.

Each of the method has its merits & demerits but inspite of that there are some other difficulties which limit the researcher to use a particular method. This is more so with the method Nos. 1 and 2. The main difficulties with the first method is the lack of availability of data on earning, their basis & change; and existing & changes in income differentials, without which the data is of very limited use; the difficulty with the second method is well known as the role of universities in developing cultural traits is highly suspected. Therefore, the third method is the only way out; though this method has its limitations, since to measure changes in quality of output are difficult to assess, but since this has been the only accepted method in the past the same has been adopted here. So for measuring output changes Academic Index will be prepared. Hence for the present study two index have been prepared, namely:

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* A study based on the study of the Institute of correspondence studies, University of Rajasthan, Jaipur.

** Blaug Mark and Wood Hall, Marran, in their study 'Productivity Trends in British University Education (1938-62) Published in Minerva 3 (1965)—pp. 484-498.

(1) Academic Index Measuring Output Changes.
(2) Input Index Measuring Input Changes.

Period of Study

Though the study covers the period from 1968-69 to 1976-77, but in actual practice the period of coverage is from 1970-71 to 1976-77. The study has been conducted at three levels & separate indexes have been calculated & productivity analysed:

(1) Overall study of the Institute of Correspondence Studies.
(2) Study of the Institute of Correspondence Studies Post Graduate (P.G.) wing.
(3) Study of Institute of Correspondence studies Under Graduate (U.G.) wing.

This has been aone because the Institute in its origin in 1968-69 started with undergraduate course but later on in 1971-72 a separate P.G. wing was estabilished for conducting corresponding course at Post Graduate Level, and later on 1976 there two separate wings were merged together.

Selection of the Base Year

The base year for preparing index for the undergraduate level has been taken as 1970-71 being the first year when all the three-year class (B.Com. Ist yr., IInd yr., IIIrd yr.) started running.

The base year for the index of Post Graduate Wing has been taken 1972-73 being the first year when both Previous & Final year Classes started running.

For the overall index again the base year selected has been 1972-73, being the Ist Year since the study of both the wings could be analysed together.

Output of Correspondence Education

The basic unit for the index of output is the student completing a course. The number of students qualified annually is therefore our first estimate of output but this understates the actual out flow of students by the numbers who leave unqualified which is technically known as drop outs. This includes two types of students one who after being enrolled do not pursue the course for the full year (known as wastage) and the other who though complete the course for the full year but fail to qualify in the Exam. (Known as stagnation). So due care has to be taken to include them also in the calculation of output.

Therefore, for measuring output of correspondence education we have collected data on the following aspects:

(1) Number of students enrolled.
(2) Number of students appeared in the examination.
(3) Number of students qualified in the examination.
(4) Total numbers dropped out.

The data so obtained have been analysed in two ways and the index has been prepared accordingly:

(1) Quantitative changes in the value of the output or the Un-adjusted Qualifying Index.
(2) Qualitative change in the value of output or the Adjusted Qualifying Index.

While in the former index, the number of students qualifying for the course is the basis, in the later due allowance has been made for the number of dropouts.

Combined Output Index

The figures of the combined output index are presented in the table given below:

Table 1

COMBINED OUTPUT INDEX OF 1972-73=100

	73–74	74–75	75–76	76–77
Enrolment Index	110·62	91·43	110·18	114·54
Unadjusted Qualifying Index	104·28	109·29	75·71	77·11
Dropout Index	92·14	77·86	100·51	98·45
Adjusted Qualifying Index	106·50	119·69	85·24	81·88

Enrolment Index: Is the index showing change in the number of students enrolled in the course.

Unadjusted Qualifying Index: Is the index showing the change in number of students qualifying in the examination without taking into accounts the number of dropout.

Dropout Index: Is the index showing the change in the number of students comprising.

(1) *Those who left the course unfinished.*
(2) *Those who though completed the course but could not pass in the examination.*

Adjusted Qualifying Index: Is the index showing the change in the number of students who qualified in the examination taking into consideration the change in the rate of dropouts.

The study of the table reveals the following trend:

(1) That there is a gradually modest increase in the enrolment index of 14.54 points in 5 years except a fall of 8·57 points in the year 1974-75.
(2) That the unadjusted qualifying index though increased in 73-74 & 74-75 by 9·29 points, but it decreased sharply in 1975-76 to 24·29 points which though improved a little bit in 1976-77 to 1·40 points from the previous year put even than it showed a decrease of 22·89 points showing significant decreased from the base year.
(3) The dropout index though decreased by 1·55 point in 1976-77 from base year but this was not a significant decrease, the only significant decrease noticed was in 1974-75 when it decreased by 22·44 points.
(4) The adjusted qualifying index which started increasing gradually till 1974-75 noticed a constant and sharp decrease in 1975-76 and since then it want on falling, showing a decrease of 18·12 points in the target year.

So we can say that while the increase in the enrolment index has been only of 14·54 points the decrease in the unadjustive qualifying index has been of 22·89 points & in the adjusted qualifying index of 18·12 points, meaning thereby that though quantitatively the institute has grown but qualitatively it has gone down.

Output Index Undergraduate (U.G.) Correspondence Studies

The figures of the output index (U.G.) are given in the following table:

Table 2

OUTPUT INDEX (U.G.) CORRESPONDENCE OF 1970-71=100

	1971–72	72–73	73–74	74–75	75–76
Enrolment Index	115·17	148·82	123·87	59·19	75·24
Unadjusted Qualifying Index	99·04	161·40	148·10	175·98	145·08
Dropout Index	101·15	73·97	79·91	65·12	81·70
Adjusted Qualifying Index	76·84	163·14	148·64	184·71	144·28

The study of the table reveals the following:

(1) There was a rising trend in the enrolment index till 1973-74, peak rise being in 72-73 but after 73–74 there is a sharp decrease in the enrolment till 75-76, a decrease of 24·76 points, showing the sharpest decrease in 1974-75.

(2) Except in 1971-72 the unadjusted qualifying index has shown a significant increase of 45·08 points in the final year, peak rise being in 1974-75 of 75·98 points.

(3) Except for the year 1971-72 the dropout index has shown a constant decrease touching the amount of decrease by 18·30 points, the highest decrease of 34·88 points in 1974-75.

(4) Except for the year 1971-72 the adjusted qualifying index shows a constant rise showing a rise of 44·28 points in the final year the highest rise of 84·71 points in 1974-75.

So we can say that while the enrolment index has decreased by 24·76 points the unadjusted qualifying index has increased by 45·08 points and the adjusted qualifying index has increased by 44·28 points meaning thereby that though quantitatively the output has gone down qualitatively it has increased.

Output Index Post Graduate (P.G.) Correspondence Education

The figures of the output index (P.G.) is given in the following table:

Table 3

OUTPUT INDEX P.G. CORRESPONDENCE OF 1972-73=100

	1973–74	74–75	75–76
Enrolment Index	143·00	132·05	156·86
Unadjusted Qualifying Index	102·77	97·89	78·78
Dropout Index	97·27	80·33	104·20
Adjusted Qualifying Index	102·05	111·26	96·85

The study of the table reveals the following facts:

(1) There is a constant rise in the enrolment index since 1972-73, which touched the increase of 56·86 points in the target year.
(2) There is a constant fall in the unadjusted qualifying index, a decrease of 22·22 points in the final year.
(3) A constant and modest fall was noticed in the droped out index till 1974-75, which rose moderately to 4·2 points in the final year.
(4) The adjusted qualifying index also continued rising till 1974-75 but noticed a moderate falling the final year of 3·15 points.

So we can say that while the enrolment index is on an increase (56·86 points in the final year), the unadjusted qualifying index and the adjusted qualifying index have decreased, registering more decrease in the earlier and a moderate decrease in the latter, meaning thereby that while output has grown quantitatively it has not been so qualitatively where a moderate decrease is noticed.

Combined Input Index: The figures of combined input of correspondence education are presented in the table given below:

Table 4

COMBINED INPUT INDEX OF 1972-73 = 100

Item	*%share in the base Year*	*Index changes*				*% share in the Final year*
	1972–73	1973–74	1974–75	1975–76	1976–77	
Total Input	100·00	142·41	202·55	215·83	221·27	100·00
Teachers Costs	22·33	87·73	99·69	112·63	126·91	28·84
Establishment Cost	19·16	102·87	145·02	160·71	133·72	25·67
Expenses on Teaching Material	41·33	105·49	75·76	60·66	70·17	29·00
Other Expenses	14·86	96·84	106·39	160·70	114·40	10·00
Non-recurring Expenses	2·32	115·09	120·26	137·93	172·41	6·49

The study of the table reveals the following facts:

(1) There has been a constant increase in the total expenses. In the 1976-77 the index has increased by 121·27 points showing more than one fold increase.
(2) The highest increase in the input index is on non-recurring expenses (increase of 72·41 points) followed by increases in establishment costs and Teachers costs. The increase in other expenses has been very limited (14·40 points).
(3) Only one item showing a decreasing trend is the expenses on Teaching Materials which has gone down by 29·83 points.

Matched with the figures of percentage share of inputs in the base year we find that though the maximum increase is in the index of other expenses but its relative share which was 14·86% in the base year has gone down to 10% in the final year. The significant increase has been on the expenses of establishment which increased by 6·5% and on the teachers costs which increased by 6.01.

On the other hand this increase of 12·51 on teachers & establishment costs seems to have been possible at the expense of the decrease on Teaching Materials which has gone down by 12·13%.

Input Index (U.G.) Correspondence Education: The figures of input index (U.G.) have been presented in the table given below:

Table 5

INPUT INDEX (U.G.) CORRESPONDENCE EDUCATION: OF 1970-71=100

Item	*%share in the base Year* 1970–71	*Index changes* 71–72	72–73	73–74	74–75	75–76	*% share in the Final Year*
Total Cost	100·00	150·98	165·28	172·08	195·56	187·57	100·00
Teachers Costs	21·87	91·09	92·59	85·56	79·74	123·59	27·03
Establishment Cost	17·53	117·97	123·50	151·11	145·24	156·13	30·37
Expenses on Teaching Material	45·40	91·85	90·75	84·14	89·65	57·27	26·00
Other Expenses	13·70	117·52	109·49	105·84	97·08	102·92	14·10
Non-recurring Expenses	1·50	106·66	126·66	140·00	149·00	166·66	2·50

The study of the table reveals the following facts:

(1) The overall Input Index started increasing yearly and in the final year it touched the figure of 187·57, showing thereby an increase of 87·57 points during the period of study, meaning thereby that the total cost has increased significantly.

(2) The highest increase is in the Input Index of non-recurring expenses which has increased by 66·66 points, followed by increase in the establishment index which has increased by 56·13 points & teachers costs which has increased by 23·59 points. Index of other Expenses has more or less remained constant.

(3) Only one item showing a decreasing trend is the Index of Teaching Materials which has gone down by as much as 42·73 points.

Matched with the figures of expenses in percentage terms we find that though the index figures show maximum increase in the non-recurring expenses but judging its share in the total expenditure we find that this is not so, since it formed only a meagre part of the total expenses (1·5 percentage in the base year), which though increased in the subsequent year but even then its share in the total expenses remained insignificant (2·5% in the final year).

The highest decrease is noticed in the share of expenses on Teaching Materials which decreased by 19·40 per cent (from 45·40 per cent in the base year to 26·00 per cent in the final year). So it appears that the increase in establishment and Teacher Costs seems to have taken place at the expense of reduction in the share of expenses on teaching materials.

Input Index (P.G.) Correspondence Education: The figures of input index (P.G.) correspondence education are given below:

Table 6

INPUT INDEX P.G. CORRESPONDENCE OF 1972-73 = 100

Item	*% share in the base year*	*Index Changes*			*% share in the Final year*
	1972–73	1973–74	1974–75	1975–76	
Total Cost	100·00	185·04	296·29	329·73	100·00
Teachers Cost	24·62	82·57	98·58	98·42	28·34
Establishment Cost	16·38	95·67	175·40	187·85	30·77
Expenses on Teaching Materials	41·00	114·63	65·85	60·97	25·00
Other Expenses	15·00	93·33	106·66	113·33	11·00
Non-recurring Expenses	3·00	100·00	100·00	100·00	4·89

The study of the table reveals the following facts:

(1) The overall expenses have risen by 229·73 points in the period of four years, showing thereby an increase of more than 2 times during the period.

(2) The only significant increase is in the index of establishment cost which has gone up by 87·85 points.

(3) The only significant decrease is in the index of expenses on teaching materials which has gone down by 39·03 points.

Matched with the figures of percentage share of inputs in the base year we find the same result. While the percentage share of the expenses on establishment cost has gone up by 14·39 per cent, the percentage share of expenses on teaching material has gone down by 16% meaning thereby that the increase in the expenses on establishment cost seems to have taken place at the expense of reduction in the share of teaching materials.

Analysis of the Productivity Trends: The figures discussed above for the input and output indexes when matched together, bring following facts to light.

Overall Productivity Trends in Correspondence Education:

(1) During the period of five years while the overall input index rose by 121·27 points, the overall enrolment index rose by only 14·54 points, meaning thereby that the input index has increased about 8 times more than enrolment index.

(2) During the period the unadjusted qualifying index has gone down by 22·89 points while the adjusted qualifying index has gone down by 18·12 points, meaning thereby that the increase in inputs has been more here in comparison to the qualifying index.

So we can say that the productivity trend has decreased quantitatively measured in terms of enrolment index and qualitatively measured in term of qualifying indexes, more so in the latter.

Productivity Trend in U.G. Correspondence Education: (1) During the period of six years the input index has gone up by 87·57 points while the enrolment index has gone down by 24·76 points meaning there by that the input index has more than doubled during the period of study. (2) During the period the unadjusted qualifying index has gone up by

45·08 points while the adjusted qualifying index has gone up by 44·28 points meaning thereby that the overall increase in input index is only about 42 points which is much less than the above.

So we can say that the productivity index has decreased more in quantitative terms than in qualitative terms.

Productivity Trend in P.G. Correspondence Education: (1) During the period of four years the input index gone up by 229·73 points while the enrolment index has gone up by only 56·86 points meaning thereby that the input index has gone up by more than four times than that of enrolment index. (2) During the period the unadjusted qualifying index has gone down by 21 points while the adjusted qualifying index had gone down by 3 points meaning thereby that the increase in input is more in comparison to the qualifying index.

So we can say that there has been a decrease in the productivity trends quantitatively as well as qualitatively and more so in the latter.

So what can we conclude about the trends in productivity in correspondence education since 1970. Whatever set of educational assumptions is adopted the increase in inputs has been greater than the increase in output which means that the production of one graduate in 1977 needed more resources than in 1970, productivity has steadily declined. The extent of this fall in productivity depending on the weighting system used for output. When no allowance is made for changes in the amount of dropout the fall in productivity is less than when the output of graduates is standardised for variations in it.

M.L. Gupta

SELECTED SOCIAL NORMS OF THE HOME SCIENCE STUDENTS

Academic achievements, though psychologists say depend basically on motivation or need to learn, there are several other factors which either help or hinder the academic achievement, social norms are one of them. Because, society has an influence not only on the physical and economic life of man but above all its mental and moral developments.

A norm, is a rule, or a standard that governs our conduct in the social situations in which we participate. It is a societal expectation. It is a standard to which we are expected to conform whether we actually do so or not. It is a specification that guides our conduct in society. It is a way of doing things, the way that is set for us by our society. It is also an essential instrument of social control. Norms surround us all of the time, but we are so accustomed to them that we seldom notice accept when we violet them.

There are many kinds of norms. They are—Laws, Statutes, Rules, Regulations, Customs, Folkways, Mores, Taboos, Fashions, Rites, Rituals, Ceremonies. Conventions and Etiquette. Bierstedt (1970), subsumed all of these norms under three major concepts to avoid verbal quibbles and semastic complications. They are—Folkways, mores and laws.

Folkways is a term introduced by the late William Graham Sumner (1940). The word means literally the ways of the folk, the ways people have devised for satisfying their needs, for interacting one another, and for conducting their lives. Folkways, in short, are norms to which we conform because it is customary to do so in our society.

The word 'mores' is the Latin word for customs, Summer (1940) said that the mores are those practices that are believed to conduce to societal welfare.

The state, embraces and supports the legal norms, that is, the Laws. Laws are more pervasive than other norms in that they are universally, and, in theory, evenly applicable throughout the state.

A norm may be modern or traditional, that is, it is the conformity towards a particular norm that decides whether a person is governed by a modern or a traditional norm. Mukherjee (1944) puts, "Man has even conceived that norms can be changed neither by himself nor by God... Norms are eternal, all pervassive and dominant, guiding and transmuting human evolution, eradicating all that is untrue, ugly or evil in it. Norms symbolize the final mystery and destiny of man...". If a person has very conservative attitude toward norms as stated above he is considered governed by traditional norm. But, a person who is dynamic and thinks that norms could be and should be remodelled with the changing of science and technology, and according to the convenience for the benefit and advancement of the society, and goes ahead with it, is considered governed by modern norm.

The term "academic achievement" indicates the learning outcome of students. These learning outcomes are the changes observed in the behaviour pattern of student as a result of learning, that take place in educational institutions, through learning of school subjects. It is restricted to the level of achievement of students in the cognitive areas of various subjects. According to Webster's Third New International Dictionary (1961), "Capacity to achieve the desired results."

The purpose of the present study was to find out whether social norms have any influence on the academic achievement of the Home science students of India. A checklist was prepared after proper scrutinization to collect the data. The sample of the present study was selected from the Home Science Colleges of India, because (a) in Home science colleges students are mostly women and (b) social norms are more strict for and active in women than men.

The investigator went personally to collect data from 14 Home science colleges which accommodate students from all over the country though situated mainly in north and west India. The students (final year B.Sc. Home Science) filled up the checklists for themselves and on behalf of their parents and the investigator collected the marks or grades obtained by the responding students in immediate past two consecutive examinations from the college records.

The respondents were distributed all over the country, though not evenly. Table I represents the frequency and percentage of the responding students according to the state they belonged to—

Table 1

DISTRIBUTION OF THE STUDENTS ACCORDING TO THEIR NATIVE STATE

Name of the state	*Number of students*	*Percentage*
Assam	13	1·444
Andhra Pradesh	63	7·000
Bihar	1	0·111
Chandigarh*	26	2·889
Delhi*	21	2·333
Goa*	2	0·222
Gujarat	175	19·444
Haryana	56	6·222
Himachal Pradesh	4	0·444
Jammu & Kashmir	6	0·667
Karnataka	5	0·556
Kerala	8	0·889
Madhya Pradesh	46	5·111
Maharashtra	82	9·111
Punjab	178	19·778
Rajasthan	84	9·333
Tamil Nadu	5	0·556
Uttar Pradesh	121	13·444
West Bengal	4	0·444
Total	900	100·000

**Union territory*

From the Table 1 it is clear that most of the states and union territories are represented in the study with maximum number of representations from Punjab, followed by Gujarat and minimum, that is only one student from Bihar among the represented states and union territories.

All the 900 respondents were divided in four categories according to their academic achievements. The average grade of the two past immediate consecutive examinations were taken as a base for the division. All the 'A' graders and/or students achieving first class included in the category of High-achievers. All the "B" graders and/or students achieving second class included in the category of Medium-achievers; All the "C" graders and/or students achieving Third class included in the category of Low-achievers, and the rests (students passed out supplementarily, with back and repeaters) were included in the category of Under-achievers. Table 2 shows the distribution of the students according to their academic achievements.

Table 2

DISTRIBUTION OF THE STUDENTS ACCORDING TO THEIR ACADEMIC ACHIEVEMENTS

Categories of Achievements	*Respondents*	
	F	%
High Achievers	171	19
Medium Achievers	352	39·111
Low Achievers	248	27·556
Under Achievers	129	14·333
Total	900	100·000

The present investigation revealed that the students and their parents are more governed by modern norms than by traditional norms. It is an welcoming sign as the modern norm synchronizes more with the present day life style of the people. Table 3 represents the distribution of the students and their parents according to their identification of modern and traditional norms.

One should note that as mentioned earlier, the students themselves only filled up the checklist on behalf of their parents and not by parents themselves. Therefore, we cannot take it for granted that students' perceptions about their parents' norms are cent percent correct. It may not depict the actual views of the parents regarding their norm conformity and therefore unwise to make a definite statement.

Table 3 has shown highly significant differences among the students themselves in their identification of norms, whether norms governing education or norms governing occupation. There were highly significant differences among the parents' in their identification of norms governing education, but as far as norms governing occupation are concerned the differences were less though significant at ·001. One of the probable reasons could be that students are more exposed to modern environment from an early age than their parents and therefore, they are more modern in their thought and action. Or, as they are not exposed themselves to working environment they are ignorant about the pro's and con's of or particular job environment and its difficulties.

Table 3

DISTRIBUTION OF THE STUDENTS AND THEIR PARENTS ACCORDING TO THEIR IDENTIFICATION OF MODERN AND TRADITIONAL NORMS

Norms	*Students*			*Parents*		
	F	%	*t-Value*	*F*	%	*t-Value*
Traditional norm governing education	260	28·88	78·114*	332	36·888	43·53*
Modern norm governing education	640	71·111		568	63·111	
Traditional norm governing occupation	312	34·666		423	47·0	
Modern norm governing occupation	588	65·333	41·011*	477	53·0	6·939*

**Highly Significant at* ·001
df=898

The study also revealed that students are more governed by modern norms than their parents were governed and the differences in identification were highly significant. (Table 4)

Table 4

DIFFERENCES BETWEEN STUDENTS' AND THEIR PARENTS' NORM IDENTIFICATION

Norms	*Students*		*Parents*		
	Mean	*S.D.*	*Mean*	*S.D.*	*t-Value*
Traditional norm governing education	4·644	1·824	5·896	2·053	13·703
Modern norm governing education	11·348	1·826	10·103	2·053	13·630
Traditional norm governing occupation	5·542	2·541	7·540	2·809	15·820
Modern norm governing occupation	10·458	2·544	8·458	2·808	15·830

It is obvious from the Table 4 that younger generation is more governed by modern norm than the older generation. It may be because of mobility in all spheres of life—physical as well as intellectual mobility. Another reason may be the result of the effort put by the different organizations to bridge the generation gap, if not at present in future, partially if not fully.

As far as academic achievement of the students concerned the study revealed that parents norms have very little to do with it. Table 5 represents the norm identification of the parents according to their daughters' academic achievements.

Table 5

MEAN AND SD OF THE PARENTS ACCORDING TO THEIR DAUGHTERS' ACADEMIC ACHIEVEMENTS

Parents' Norms	*High Achievers* (*N*=171)		*Medium Achievers* (*N*=352)		*Low Achievers* (*N*=248)		*Under Achievers* (*N*=127)	
	Mean	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Traditional norm governing education	5·759	1·993	6·455	1·997	5·836	1·937	6·962	1·569
Modern norm governing education	10·240	1·993	9·544	1·997	10·163	1·937	9·037	1·569
Traditional norm governing occupation	7·294	2·596	7·723	2·63	7·192	2·703	8·433	2·039
Modern norm governing occupation	8·705	2·596	8·273	2·63	8·807	2·703	7·566	2·039

It is clear from the Table 5 that parents are common in their identification of norms either traditional or modern irrespective of their daughters academic achievements level, though parents of high and the low achievers and parents of medium and under achievers are more common in their identification to both the norms governing education. But in the norms governing occupation, all parents are more or less common in their norm identification.

In their identification of norms students are also very much alike irrespective of their academic achievements. Table 6 depicts the identification of norms of the students according to their academic achievements.

It is evident from Table 6 that high achievers and low achievers are more common and medium and under achievers are more common in their norm identification either traditional or modern norm governing education. The norms, either traditional or modern governing occupation; medium, under and low achievers are almost same in their identification; only high achievers are more modern than the other three groups.

It is obvious from the tables that parents are less modern than their daughters in their norm identification, but it is the modern norm that predominantly governed the students as well as their parents. Table 7 represents the differences between the students and their parents in their norm identification according to the academic achievements of the students.

Table 7 shows highly significant differences between students of different achievement levels and their parents' norm identification. One thing to note that very strikingly similar t-values were found on traditional as well as modern norms of students of all the different levels of achievement and their parents. Differences are more on the norms governing occupation than norm governing education for all the different levels. Under achievers

Table 6

MEAN AND SD OF THE STUDENTS ACCORDING TO THEIR ACADEMIC ACHIEVEMENTS

Norms	*High Achievers* ($N=171$)		*Medium Achievers* ($N=352$)		*Low Achievers* ($N=248$)		*Under Achievers* $N=129$)	
	Mean	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Traditional norm governing education	4·5247	1·7736	5·2941	1·7408	4·8633	1·5454	5·9502	1·8825
Modern norm governing education	11·4677	1·7736	10·7059	1·7408	11·131	1·5459	10·0419	1·8824
Traditional norm governing occupation	5·0058	2·3655	5·921	2·4831	6·5991	3·3328	5·9136	1·9119
Modern norm governing occupation	10·9941	2·3655	10·082	2·4909	10·4007	3·3328	10·0864	1·9119

have less differences, though significant, with their parents, on the norms governing education, and maximum differences on the norms governing occupation than all the oth three different levels.

Table 7

DIFFERENCES BETWEEN STUDENTS' AND THEIR PARENTS' NORM IDENTIFICATION ACCORDING TO THE STUDENTS' ACADEMIC ACHIEVEMENT LEVEL

Achievement levels	*t-value*			
	Education		*Occupation*	
	Modern	*Traditional*	*Modern*	*Traditional*
High Achievers	6·0093	6·0551	8·5211	8·5214
Medium Achievers	8·2289	8·2289	9·3502	7·3349
Low Achievers	6·1525	6·1870	7·1532	7·0266
Under Achievers	4·6565	4·6928	10·2426	10·2426

All significant at ·001 *level.*

Among the students themselves too, differences are significant in their norm identification, between various groups. Table 8 shows the differences.

Table 8

DIFFERENCES IN NORM IDENTIFICATION AMONG THE STUDENTS ACCORDING TO THEIR ACADEMIC ACHIEVEMENTS

Categories of students	*Education*		*Occupation*	
	Traditional	*Modern*	*Traditional*	*Modern*
High and Medium	4·6836***	4·6378***	4·0837***	4·0699***
High and Low	2·0231*	2·0231*	2·5384*	2·5383*
High and Under	6·6580***	6·6594***	3·6752***	3·6743***
Medium and Low	3·1907**	3·1486**	1·6204	1·6050
Medium and Under	3·4554***	3·4965***	0·3433	0·0209
Low and Under	5·6443***	5·6553***	1·4030	1·4022

**Significant at* ·05.
***Significant at* ·01.
****Significant at* ·001.

It is evident from the Table 8 that high and medium, and high and under achievers are more significantly differed than high and low achievers in both traditional and modern norm governing education and occupation. Again, under and medium achievers and under and low achievers are more significantly differed than medium and low achievers in their identification of traditional and modern norms governing education. As far as occupation is concerned none of the categories of medium and low, medium and under and low and under were differed.

The study further revealed that modern norms correlated with the academic achievement of the student more than traditional norms. Table 9 represents the relationship of modern and traditional norms of the students and their parents' with the academic achievements of the students.

Table 9

CORRELATION BETWEEN STUDENTS' AND THEIR PARENTS' MODERN AND TRADITIONAL NORM AND RESPONDENTS' ACADEMIC ACHIEVEMENTS

Norms	*Correlation*	
	Parents	*Students*
Traditional norm governing education	–*10479	–·22732
Modern norm governing education	0·10479*	0·22829**
Traditional norm governing occupation	–·00630	–·14491
Modern norm governing occupation	0·00630	0·14491**

**Significant at* ·01.
***Significant at* ·001.
df. 898

Table 9 clearly shows that students' norms have highly significant relationship with their academic achievement as far as norms governing education is concerned. Regarding the norms governing occupation, parents' norm do not have any significant relationship with their daughters' academic achievements.

As academic achievements eventually affect the person's occupation, and as modern norms have an influence on academic achievement, these two concepts are interrelated. The present study revealed that students are heading towards modernity irrespective of their academic achievements, but one cannot say for sure whether it will continue or stop. In that case they should be provided some atmosphere which will help them to become more and more modern, otherwise there is possibility of stagnation. Students should be exposed to the environments where modern norms are more acceptable than traditional norms. But, here, then the question arises of how much? Because, too much of modernity may endanger the life of the students. For solution, one can follow what Baureti-Fuchs (1976) found out about high achievers. His study revealed that high achieving male college student is a person who, is rather a conformist in his social values, accepts the rules of the society. but within this context he is nevertheless independent mined. High achieving female expected to be successful academically and have a positive attitude towards social interaction. Our Indian female students can also be expected to be successful academically when they are exposed more to the environments where only modern norms prevail but with specified limits.

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A. Chandra and Aparna H. Khaund

SOCIO-ECONOMIC PROFILE OF TECHNICAL GRADUATES IN ORISSA UNIVERSITY OF AGRICULTURE & TECHNOLOGY

The educational system in India is at the cross road. Many educationists and scientists are of the view that educational standard of our country is deteriorating steadily and more so at the University level. Since independence, many attempts have been made to bring about change in the educational organisation, course contents, method of examinations etc. with a view to achieving tangible improvements in the system of education. All these effects have led to no significant change in the teaching-learning standards. However, the fact to be analysed is whether learners fail to learn effectively or the courses are not offered as expected. Besides these assumptions, the other hypothesis is also possible that academic achievement is related to the socio-econmic conditions of the students. This hypothesis was tested in our technically University, O.U.A.T. with the Colleges of Agriculture, Agril. Engineering and Veterinary Science as constituent parts.

Research Design

The study was undertaken at the Orissa University of Agriculture and Technology, Bhubaneswar, Orissa which is the second oldest Agricultural University in India (established in 1962). The final year out going graduate students of the College of Agriculture, Agricultural Engineering and Veterinary Science constituted the sample for study. A complete enumeration method was followed to collect the required data even though many of the respondents did not extend their co-operation. Altogether, 145 students had participated in the study (Table 1). The respondents were supplied with a structured schedule to record their response independently and return them within a week. The information collected was statistically processed to come to a finding as needed under specific objectives. The sample size of the study appear in Table 1 given below:

Table 1

SAMPLE SIZE OF THE STUDY

College	*Total Strength*	*Participants*	*Percentage of the total*
1. Agriculture	126	78	61·90
2. Agril. Engineering and Technology	33	22	66·67
3. Veterinary Science	45	45	100·00
Total	204	145	71·08

Objectives

The study was designed to assess the academic climate of O.U.A.T. in general and the following objectives in particular.

1. To study the socio-economic condition of the students and their relation with academic achievements.

2. To determine the differential reactions of the students towards academic programmes of the University on the basis of their own experiences.

Results

All the respondents were classified into two categories on the basis of their over all grade point average (OGPA) obtained till to date in four point scale. The students who had earned OGPA 3/or/more were ground under G-I and those who obtained less than 3 as G-II. On the basis of this classification, the distribution of the respondents was as in Table 2.

Table 2

DISTRIBUTION OF STUDENTS ON GRADE POINT AVERAGE

Group	*OGPA*	*Agril.*	*Agril. Engg.*	*Vet. Science*	*Total*
I	3 & >	60	9	24	93
II	<than 3	18	13	21	52
Total		78	22	45	145

As indicated in Table 2, maximum students (93 or 64·14%) of the sample had secured OGPA 3 or more than 3 while only 52 of them (35·86%) had secured less than 3 in a scale of 4 point grade point measurement. This clearly indicates that majority of the students at OUAT secure good grade point in their career.

Further, on determining the students as insiders and outsiders the following information were obtained.

Table 3

IN-SIDE AND OUT-SIDE STUDENTS IN SAMPLE

College	*Inside*	*Outside*	*Total*
Agriculture	76	2	78
Agril. Engg.	20	2	22
Veterinary Sc.	42	3	45
Total	138	7	145
Percentage	95·17	4·83	100·00

As indicated in Table 3, it is observed that hardly 5 per cent of the students are outsiders while the remaining 95 per cent are the residents of Orissa.

Further in determining the distribution of insiders district-wise, the information obtained is as in Table 4.

Table 4

DISTRICT-WISE DISTRIBUTION OF INSIDE STUDENTS

District	*Agril.*	*Agril. Engg.*	*Vet. Science*	*Total*	*Percentage*
1. Balesore	9	4	1	14	10·14
2. Bolangir	0	0	0	0	0·00
3. Cuttack	25	3	19	47	34·06
4. Dhenkanal	3	2	3	8	5·79
5. Fulbani	2	0	0	2	1·49
6. Ganjam	7	5	4	16	11·59
7. Keonjhar	0	0	1	1	0·75
8. Kalahandi	0	0	0	0	0·00
9. Koraput	0	0	1	1	0·75
10. Mayrbhanja	4	0	0	4	2·89
11. Puri	25	6	8	40	28·88
12. Sambalpur	0	0	3	3	2·17
13. Sundargarh	0	0	2	2	1·49
Total	76	20	43	138	100·00

It is evident from the findings contained is Table 4 that majority of the students come from the district of Cuttack (34·06%), Puri (28·88%), Ganjam (11·59%), and Balasore (10·14%). It is interesting to observe that none represented the districts of Bolangir and Kalahandi which are the tribal dominated districts in the State. Many of the students come from Cuttack, Puri, Ganjam and Balasore districts because these four districts are more progressive compared to others and their proximity to Bhubaneswar where the OUAT functions.

Besides these basic information, the socio-economic variables like age, caste, place of residence, place of past academic career, religious living, parensual education, family size, type, parental occupation and sources of financial help were studied in detail.

(1) *Age of the Students:* The age group of the two categories of the students was analysed as given in table below:

Table 5

AGE GROUP OF THE STUDENTS: (AVERAGE)

College	*G. I*	*G. II*	*Difference*
1. Agriculture	22	23	1
2. Agril. Engineering	21	21	0
3. Veterinary Science	22	23	1

It is observed that G. I and G. II students do not differ in their age. The average age of the students varies from 21 to 23 years is completing technical graduation, i.e. B.Sc. (Ag.), B.Sc. (Agril. Engg.) or B.V.Sc. The hypothesis that better students are younger in age as compared to low performance is not found out, since the statistical difference does not appear to be significant. In other words, at technical institutions, age is no criterian to determine the achievements of the students.

(2) *Caste:* The relation between caste and academic achievements of the students was assessed as given below:

Table 6

CASTE AND ACADEMIC ACHIEVEMENT

Caste	*G. I*		*G. II*		*Total*		*Value*
	f	%	*f*	%	*f*	%	
(1) Schedule-Caste	7	7·53	9	17·31	16	11·03	6·35*
(2) Schedule-Tribe	1	1·07	3	5·77	4	2·75	
(3) Forward Caste	85	91·40	40	76·92	125	86·22	

**Significant at 5% level of probability.*

Forward class included all other students who did not belong to either scheduled caste or scheduled tribes. It is observed that S.C. and S.T. proportion in the sample is very negligible. Moreover, in both categories, the forward caste students are majority in number. The value under X^2 reveal a significant trend to conclude that caste is one of the factors that determine academic performance of the students.

(3) *Native Place of Residence:* The native place of the respondents was categorised in terms of village, municipality small city and big city. The results in this regard appear in table given below:

Table 7

NATIVE PLACE OF RESIDENCE AND ACADEMIC PERFORMANCE

Place	*G. I*	*G. II*	*Total*	*X^2 Value*
(1) Village	67	49	106	4·584 N.S.
(2) Municipality	13	6	19	
(3) Small city	11	7	18	
(4) Big city	2	0	2	
Total	93	52	145	

N.S. not significant.

As it appears from the table above, maximum students 106 (73·10%) come from villages followed by municipality 19 (13·10%). Small city 18 (12·41%) and Big city (1·39%). The relation between place of residence and academic achievement ($X^2 = 4{\cdot}584$ N.S.) is not found to be significant. It is, therefore, concluded that place of residence bears no impact on academic progress of the students.

(4) *Religious Living:* It was observed that majority of the students (141 out of 145) professed, Hindu religion and the rest 4 were Muslims. On ascertaining the practice of prayer by the students in relation to their achievement in studies the following results were obtained.

Table 8

PRACTICING OF PRAYER AND ACADEMIC ACHIEVEMENT

Frequency	*G. I*	*G. II*	*Total*	*X^2 Value*
(1) Every day	52	28	80	10·02*
(2) Occassionally	18	8	26	
(3) Never	23	16	39	
Total	93	52	145	

**Significant at 5% level of probability.*

The findings in table above indicates that majority of the students (80 or 55·17%) practice prayer everyday while 39 of them (26·89%) do not practice prayer at all. As much as 26 respondents (17·94%) practice prayer occasionally when required on certain religious festivals. The X^2 value is found significant confirming the hypothesis that academic achievements is better with students of religions background.

Further, an attempt was made to investigate into the extent to which students read religious books. The result as a whole was obtained as recorded in table given below:

Table 9

READING OF RELIGIOUS BOOKS

Books	*Regular*	*Occasionally*	*Never*	*Total*
(1) Ramayan	0	70	71	141
(2) Mahabharat	0	94	47	141
(3) Bhagavat	0	0	141	141
(4) Gita	18	50	73	141
(5) Koran	4	0	0	4

It is observed that out of 145 respondents, 4 were muslims who read Koran regulalarly, while a variation was observed in case of the students belonging to Hinduism in reading of religious books. It is depressing to note that as much as 71,47,141 students have never read Ramayan, Mahabharat and Bhagavat respectively. However, 18 and 50 students were found to be reading Gita regularly and occasionally respectively.

The study discloses interesting results on the relation between attending of religious meetings and academic progress of the students. The results in this regard is summerised in the table given below:

Table 10

ATTENDING OF RELIGIOUS MEETINGS

Meetings	*G. I*	*G. II*	*Total*	*X^2 Value*
1. Attended	50	26	76	6·340*
2. Not-attended	43	26	69	
Total	93	52	145	

**Significant of 5% level of probability.*

It is evident from the table above that 76 students do attend religious meetings as against 69 who never attended the same. The X^2 value was found to be significant leading to the inference that academic achievement is better with the students who attend religious meetings and seminars. In other words, the religious minded students report better performance in studies compared to those who are not that religions.

In probing further, an attempt was made to study the belief of the students on religious living as has been shown in table given below:

Table 11

BELIEF IN RELIGIONS LIFE (MEAN)

Statements	*G. I*	*G. II*
1. Existance of God	0·935	0·865
2. Value of prayer	0·913	0·750
3. Faith in God.	0·894	0·865
4. Spiritual life	0·784	0·673
Mean	0·881	0·788

The mean score analysis contained in Table 11 reveals that the students of G. I do have greater faith on religious life (8·881) than that of students of G. II (0·788). Further, in the statement of existance of God, value of prayer, faith in God and spiritual life are more positively perceived by the students of higher grades compared to lower grade students. It is, therefore concluded that faith in God and motivation towards religious living have distinct impact on the students so far as their academic career is concerned.

(5) *Family Size and Type:* Family system of the respondents was studied from two important angles. These was family type and size of families to which the students belonged. On analysing the impact of type of family on educational performance of the students the results was obtained as follows:

Table 12

FAMILY TYPE AND EDUCATIONAL ACHIEVEMENT

Family Type	*G. I*	*G. II*	*Total*	*X^2 Value*
1. Joint	33	17	50	
2. Single	60	35	95	3·95 N.S.
Total	93	52	145	

N.S.: Not Significant.

As shown in Table 12, majority of the students (95/145) belonged to single family system as against 50 respondents who came from joint families. The value under X^2 test ($X^2 = 3 \cdot 95$ N.S.) did not reveal the influence of family type on academic performance. This disproves the hypothesis that family background influences the academic achievements of the students at College level.

Average size of the families to which respondents belonged was found out as given in Table 13.

It is very interesting to observe that students of G. I and G. II have same family size, same members on education and service. It is, therefore inferred that family size a

Table 13

AVERAGE SIZE OF THE FAMILIES

Particulars	*G. I*	*G. II*
(1) Size	10	10
(2) Members on education	4	4
(3) Members on service	3	3

along with particulars like family members on education and service are not all the factors of differentiation so far the academic performance of the students at College level is concerned.

(6) *Educational Status of the Family:* Educational status of the families of the respondents to which they belonged was examined in term of number of members with educational attainments in families. This was again measured in terms of illiterates, primary level, middle school level, high school level and the level of graduate & technical education. The results appear in Table 13.

Table 14

EDUCATIONAL STATUS OF THE FAMILIES

Educational Status	*G. I*	*G. II*
1. Illiterate	0·827	0·807
2. Primary	1·075	1·365
3. M.E. School	1·215	1·207
4. High School	1·408	1·634
5. Graduate	1·473	1·288
6. Post-Graduate	0·548	0·326
7. Technical	1·182	1·211
Mean	1·104	1·118

The mean analysis presented in table above reflects the fact that G. I and G. II students do not differ markdly in the educational status of their families. The mean of the means indicates that even G. II students do have better educational status (1.118) in their families compared to G. I students (1.104). In other words, the findings conclude that educational status of the families hardly influence the academic performance of the students at College level.

(7) *Parental Occupation:* Parental occupation is another important variable that influences academic motivation and achievement of the student. This hypothesis was put to test as shown in Table 15.

Table 15

PARENTAL OCCUPATION AND ACADEMIC PERFORMANCE

Occupations	*G. I*	*G. II*
(1) Farming	0·891	0·846
(2) Business	0·462	0·230
(3) Service	1·247	1·307
(4) Independent job	0·279	0·079
Mean	0·719	0·615

It is evident from the facts cited above that students belonged to G. I are in a better position compared to G. II in the matter of parental occupations on farming, business and independent job. The mean of the mean indicates that the parents of G. I students have better occupations than that of students belonged to G. II. Therefore, it may be concluded that students of G. I have better parental occupations over the lower grade students.

(8) *Financial Sources:* It was within the scope of the present investigation to find out the financial sources of the students at OUAT. The responses receiveo are summerised in table 16 given below:

Table 16

FINANCIAL SOURCES OF THE STUDENTS (N=145)

Sources	*G. I*	*G. II*	*Total*	*Per cent*
1. Parent	91	38	129	88·96
2. Scholarship	61	28	89	61·38
3. Loan stipend	44	19	63	43·45
4. Self earning	2	3	5	4·45
5. Friends	9	5	14	9·65

As it is evident from the table above that maximum number of students (88·96%) depend on parents for finance followed by Scholarship (61·38%), loan stipend (43·45%), friends (9·65) and self-earning (4·45%). Similar trend is observed in case of both the categories of the students. It is, therefore, conferred that students of O.U.A.T. mostly depend on parent, scholarship and loan stipend to prosecute their studies.

(9) *Motivational Forces for Admission:* On enquiring the motivational forces behind their decision to take admission into O.U.A.T. at different faculties the students have responded as in table below.

Data in Table 17 reveal that maximum students (75) have taken admission in O.U.A.T. as per their self-decision followed by the decision of the parents, friends and relatives. The X^2 value reveals that motivational forces influence significantly the academic achievement of the students.

Table 17

MOTIVATIONAL FORCES ADMISSION AND ACADEMIC PERFORMANCE

Forces	*G. I*	*G. II*	*Total*	X^2 *Value*
(1) Parent	24	15	39	8·13*
(2) Friends	12	7	19	
(3) Relatives	8	4	12	
(4) Self-decision	49	26	75	
Total	93	52	145	

Significant at 5% level.

(10) *Reasons behind Choosing the Line of Profession:* Attempts were made to secure the reasons for which the students were led to take admission at OUAT in different faculties. Their reactions are recorded in the following Table 18.

Table 18

STIMULATING FACTORS FOR ADMISSION

Reasons	*Agriculture*		*Agril. Engineering*		*Vet. Sc.*		*Total*	*Percent*
	f	%	*f*	%	*f*	%		
(1) Assured job	65	83·33	18	81·81	29	64·44	112	77·24
(2) Social Prestige	8	10·25	2	9·09	7	15·55	17	11·72
(3) Financial help	10	12·82	3	13·63	5	11·11	18	12·41
(4) Self-interest	27	34·61	6	27·27	20	44·44	53	36·55

As it appears from table above, job assurance is the dominating factor for which majority of the students (77·24%) were attracted to take admission in O.U.A.T. followed by self-interest (36·55%), financial help (12·41%) and social prestige (11·72%). The students of Agriculture College were mainly attracted for admission in view of assured job, self-interest, social prestige and financial help in prosecuting higher studies. The same was the trend in case of the students of Agril. Engineering where as the students of Veterinary Science College assigned more value to social prestige over financial help keeping all other factors in as in case of the students of other two Colleges.

Conclusion

The findings of the study lead to the following conclusions:

(1) Majority of the students at O.U.A.T. secure more than 3 grade point in 4 point scale.
(2) The strength of outside state students hardly constitute 5 per cent of the total student mass of O.U.A.T.

(3) Coastal district students constitute majority of the student population at O.U.A.T.

(4) There is hardly any difference in age group of the students of different faculties of O.U.A.T. and between the students of higher and lower grade point earners.

(5) Caste structure of the students influences their academic performances.

(6) Academic achievement of the students is not related to the place of their permanent residence or environment.

(7) Belief in religious life such as practising of prayer, reading of religious books, attendance at religious meetings and belief in existance of God has significant bearing on the educational attainment of the students.

(8) Family type and family size is not related with academic achievement of the students.

(9) There is not much difference in educational status of the families and parental occupations of the students of higher and lower grade point earners.

(10) The major financial sources of the students of O.U.A.T. are parent, scholarship and loan stipend.

(11) Self-decision, parental choice, influence of friends and relatives are the major motivational factors for students taking admission at O.U.A.T.

(12) Assured job, self-interest and institutional financial aids are the reasons for which the students are motivated to take admission in O.U.A.T.

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Communications

THE FUNCTIONS AND PROBLEMS OF THE URBAN UNIVERSITY IN THE WEST: A COMPARATIVE PERSPECTIVE*

President Harold Proshansky Graduate School City University of New York (C.U.N.Y.) remarked that the last 15 months has set a new context for cutbacks in higher education. This growing indifference to education is even more disheartening than the actual money losses. But there are hopeful notes, and he declared that the time has come to fight back.

Professor Feliks Gross President, CUNY Academy for the Humanities and Sciences said there has been huge growth in universities since the war and a corresponding change in the functions of higher education. The CUNY Academy looks to the future of urban higher education and is delighted to sponsor this conference.

Chancellor Robert J. Kibbee City University of New York noted that he has had a baptism of fire in defining the urban university and its problems. More than any other institution, it is a product of its setting. He hopes the conference would enrich our thinking on the urban university in a comparative context.

Urban Higher Education Experiences from Germany and Japan and Regionalization in West German Post-Secondary Institutions

(Ulrich Teichler, Comprehensive University of Kassel) W. Germany: There has been a regional dispersion of colleges in the sixties but this has not always led to a community interaction with the campus. In a comparison of Japanese and German situations, we see two countries that do not prefer residential colleges and do not exclude the idea of an urban university.

Most German universities are in remote towns. But this is changing. Twenty-eight per cent of student enrolment is in the five major German cities. Four of the six largest universities are urban. Students seem to prefer urban settings particularly since it provides an advantage for full or partial employment.

Recently German universities are under growing pressure of legitimization, adult education counseling and technical transfer. This change is glacially slow.

Japan's concentration of universities in major metropolises is very high, with over a hundred in Tokyo alone. The government policy has been to establish elite universities.

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*The CUNY Academy for the Humanities and Sciences Conference, March 21-22, 1982.

Therefore private urban universities have become important, absorbing much of the increased enrolments of the '50s and '60s. The government now subsidizes them in order to maintain standards.

Hopes aroused in the past decade for structural and curricular changes in higher education have not been fulfilled *except* for regional expansion. He cites the 1965 suggestions of Clemens Geissler for the creation of 30 new universities in West Germany. Twenty-five new universities were subsequently established in disparate regions. Teichler characterizes this as ninety per cent success though he does note that enrolment at new institutions has not matched enrolment increases at the older universities.

The rationale for expansion has changed—from the need to rebuild a solid system after World War II to the newer goal of educating a generation up to and even beyond the requirements of the job market.

Professor Teichler went on to discuss the post-1967 proposals to coordinate higher educational resources within regions. Proposals that sought to marry older universities with the new institutions were viewed with suspicion by the former, jealous of their prestige and the latter, afraid of being relegated to a marginal role. Such proposals are currently extent only in Hamburg. However, in regions without pre-existing universities, state planning has successfully put students together from universities and vocational schools for a common first year of study.

Government policy wishes to attract students from non-traditional backgrounds. Efforts to involve the community in creating the new regional universities are made on every level, even the awarding of construction contracts and the development of work/study programs similar to the English sandwich courses.

Teichler introduced three goal-models of regionalization: (a) different universities serving the same educational needs; (b) different universities serving the specific regional needs; (c) different universities having special functions based on a national division of labor between the universities. Initially, the German system adopted goal-model (c), but with graduates becoming more immobile and in an era of shrinking resources, future planning is tending to adopt the regional goal-model (b).

Analysis in Politics: The Regionalization of Swedish Higher Education (*Rune Premfors, University of Stockholm*): Professor Premfors made his initial distinction between analysis (intellectual cogitation) and social interaction (politics and the marketplace).

In Sweden there are two medieval universities in small towns within metropolitan areas and two 19th-century universities in the large cities. The first step towards regionalization saw the creation of a fifth university (from the foundation of a medical school) in the frontier-like northern region, the University of Norrland. This occurred in the early '60s with a concurrent explosion in student enrollment. The policy decision was to create "branch" universities throughout the country. They were to be the primary beneficiaries of the expansion in educational funding.

The analytic planning underlying this policy decision had two functions: to rationalize the decision to regionalize and to pinpoint suitable locations for branch universities. The University of Norrland had little systematic analysis before its creation since the medical school was already in place and political pressure was strongly for it.

After that impromptu creation the "U-63" commission was formed to study and evaluate alternatives for the expansion of higher education. Their criteria were mechanistic, though the subjective element came into play when two criteria for location sites ran afoul of each other. Traditional academics opposed branches fearing the dissolution of close links between research and teaching. The commission turned this argument around to favour concentration and specialization. They avoided value-oriented controversies since the government's strategy was to make the issues as technical and objective as possible.

A subsequent commission, "U-68", had the ambitious task of proposing a comprehensive strategy for higher education. Their report argued that regionalization would contribute to "equalization of participation on the part of different groups." The creation of the sixth university (Umea) was found to have a favorable impact on the regional economy. Graduates tended to find employment near their school. "U–68" also valued the ability of students to maintain intimate non-academic connections at regional universities as opposed to traditional campus isolation.

Again major universities opposed further regionalization citing dissipation of scare resources. However, unions, socialist parties and the Center party already favored regionalization. The parliament passed "U–68" regional policies in 1975. The controversy reappeared when the government fell in 1976, but the regional schools had displayed vitality once established and are fully capable of self-defense.

Premfors concluded that analysis played an ambitious and overwhelming role in shaping higher education policy. Both "U–63" and "U–68" went to great lengths to establish objective criteria. A few worried that these objective criteria were set after the judgment for regionalization, and had been made without adequate discussion. The National Audit Bureau released a dissenting study that found the impact of university branches marginal. Premfors feels that despite the sincere attempt at analysis the issues are too complex to avoid politicization. In the final view only social interaction can justify the regional planning, not analysis.

Professor Roger Geiger (*Yale University*) (*Commentator*), after hearing the papers presented, found a relationship between nordic regionalization and the problems of American urban higher education. There is an implicit tension in the dichotomy between the academic community and regional goals within three issues: clientele, output, and role of higher education. The community favors the well-prepared student and has as its stated function the expansion of knowledge. The regional goals emphasize students of allages and backgrounds and wish studies to be targeted to social and marketplace needs. Premfors showed how Swedish regionalization used partisan analysis while Teichler reviewed how entrenched German academics overwhelmed regional planning.

The period of college study represents a free period in the organized life of an educated Japanese. Urban settings serve to maximize this freedom and are advantageous to job placement. Professors can also take advantage by seeking extra-curricular opportunities in the centralized areas. It is a paradox that despite the urban setting and also the interest and respect the community has for the university, the schools are self-sufficient and self-contained to the point of even having their own food stores.

Urban Higher Education in Great Britain Maurice Kogan (*University of Brunel*) *UK:* Professor Kogan introduced his paper with some observations on American urban higher education. The problems of education are far more sharp in the States than in Great Britain though recent Tory cuts may change the English situation drastically. American universities have been described as "businesses" gobbling up the general "ecology" in order to isolate academia from the urban masses. The city accumulates goods to achieve general well-being and to develop a community of trust between people. These urban functions do not sit well with the classic definitions of a university, which favors individual development over communitarian goals.

The expansion of universities in the '50s and the '60s was simultaneous with the construction of motorways and hi-rises and led to unexpected conflicts. New groups sought admission to the university and brought us to the question of who has power in higher education.

The British have managed to keep true to academic purposes while responding to industry and society by opening up their collegiate ranks to those with merit. There has been no wholesale attempt at wider access. Indeed, working-class enrollment is declining. Continuing adult education is faltering. The elite classical model is intact and will remain so under reductions imposed by the Conservative government.

Until recently the British pattern of university government was a model for all higher education systems where the bulk of the funds came from public money. It was assumed that the basic unit, the teaching department, would sustain academic norms while the government would liberally assist the university to meet the needs of the outside community.

Now negotiations between the state and the university are rigged. Tenure is being taken away. Hard sciences and engineering are being reinforced without academic self-determination. The academics are being demoralized by a freely elected democracy.

The author's concern for the future is that the traditional internalist model of higher education remains legitimate. Adherents of open access should respect the values of this model. The access should be to scholarship, research, logic, beauty and argument. Prof. Kogan is impressed by the way unlikely open-access students have fulfilled this tradition

The second tradition of British education is pastoral and needs to be expanded. This tradition can provide an environment for mid-careerists to reconstruct their life and work through higher education. The academic influence could improve even the unglamorous public services.

At present, British higher education will have a tough struggle against the government for they have no supporting constituency, neither alumni nor private philanthropy. This is the price for outside freedom. There must be a change in value to trigger a change in structure. The councils and trustees must become stronger as social decision-making becomes more complex in Britain. Prof. Kogan concluded with the thought that as America has encountered problems of urban universities before Great Britain, so might it lead with providing the solutions.

Demography, Demogogy and Decline: or, how the Universities of France and Britain are neither grinning nor bearing it (*Guy Neave Institute of Education, European Cultural Foundation*)*:* The Barbarian invasions forced the Britons to plead with Rome for salvation. Even their pleas did not have the same bitterness as the outcry of British academicians over the 17 per cent cut in government expenditures. The proposed decline in student admissions corresponds to the imperial tradition of decimating the legions.

This is in marked contrast to the socialist France, where the university budget will be increased by 17 per cent and research by 30 per cent.

Mr. Neave then went on to compare and contrast the two university systems. He began by noting that both are state financed. Great Britain has some student fees while France has none. In Great Britain there is a University Grants Commission that is the buffer between the government and the university. France has a tradition of direct state control of academia. It is supremely ironic that now just as the British government has reduced the UGC to be its own creature, France is contemplating the creation of such a body to decentralize control.

Both educational systems train their students primarily for state service and only as an afterthought for the private sector. Private universities play a rather restricted role. The countries are dissimilar in that for France the Baccalauréat entitles the student to a university spot while the university controls the selection and entry of students in Britain. While France has little control over the selection of students, the British state has less control over staff selection. Promotions are matters of peer evaluation. France treats its tenured faculty as civil servants. One of fourty-four national committees administers hirings and promotions according to formal rules. The central ministry can transfer posts within the university system at will. Many object to such central power, but it can ease the pain of lay-offs in times of contraction. The differences can be traced to a liberal distrust of government in England contrasted with the state's mission to civilize in France.

Demography

These are the three factors to be considered: (1) the size of the age group; (2) the proportion qualified; (3) the proportion qualified who do enroll. Both France and Great Britain will see a rapid decline in the first factor. By 1995 there will be a 19 per cent drop in Great Britain and 12·5 per cent in France. This effect will be aggravated in Great Britain for the second factor will remain constant even though it is increasing on the European continent (e.g., France has gone from 12 per cent [1966] to 25 per cent [1980]). The third factor is declining in Great Britain, declining at a slower rate in Germany and Italy, and is actually increasing in France (though in absolute proportions the United Kingdom remains in the lead).

The continuing fall-off in students allows the British Government to justify its cutbacks with the same objective the French used in 1976; to bring the university in line with the needs of the marketplace. Disciplines deemed "economically relevant" were favored (in France) by an obscure reallocation of overhead financing.

The present Socialist government has used this idea of linkage with local industry in conjunction with their plans to decentralize.

It is a curious spectacle in which each country seeks the model the other is abandoning. The Socialists have called for a thousand new posts while the Tories plan to eliminate 3000 tenured staff positions. The French are enamoured of decentralization while the demise of the University Grants Commission is rumored in London. France has even begun to talk about increasing "quality control" for the selection of students.

In conclusion, Mr. Neave remarked that both countries might prove to be "intolerable" mirror images of each other.

Contrasts Between CUNY Faculty and Basic Writing Students Dean Marie Jean Lederman (Office of Academic Affairs, CUNY): Dean Lederman opened her remarks with the observation that resistance to open admissions has gone underground, and is evidenced by faculty burnout, student apathy and the emotional withdrawal of all concerned parties. Since the introduction of the open admissions policy the student has changed dramatically to the point where now 40 + per cent are twenty-five years old or older, and come from low income families (indeed 40 per cent are from families with incomes of less than $8,000 per annum). The difference between the faculty's and student's backgrounds can be measured in light years. English as a second language poses attitudinal problems for students. Their generation no longer accepts English automatically as did the faculty's.

Dean Lederman conducted a study of open admissions students in 1973 by asking them to write a response to the question "You will be reborn again, how do you want to come back?" The relatively more skilled respondents generally used images of powerful wise human beings (e.g. Socrates) or big animals (Bengal Tiger). The unskilled used small imagery (birds) to express their desires of reincarnation.

A Faculty Training Program for Teaching Triple Remedial Students (Rose Ortiz, Peter Miller, Joseph Schwartz College of Staten Island, CUNY): Rose Ortiz began by asserting that the problem of remediation continues to be a difficult one for open access urban colleges. A 1980 survey of the Office of Institutional Research at the College of Staten Island showed that of the entering freshman class 27 per cent were ranked remedial in reading, 53 per cent in mathematics and 37 per cent in writing. As a measure of how poorly this educational challenge is being met at present one notes that the attrition rate of freshmen who required remediation was 43·8 per cent after the first year.

A faculty training program designed to equip teachers to deal with the special problems of triple remedial students was initiated by the college in Fall 1980. Led by Professor Rose Ortiz, the Developmental Education Study Group included 11 participating faculty members from the departments of English, mathematics, physics, biology, history and business.

Elements of the orientation included a review of previous teaching experience in basic skills and a series of thought-provoking exercises designed to acquaint faculty with their own learning processes. These exercises effectively had faculty in the position of reading learners focus on the area in which teachers in subject disciplines feel most ill-prepared and uncomfortable. Backward mirror image and unspaced texts re-introduced faculty to the experience of frustration, uncertainty, anxiety, the importance of suspending judgment, questioning and relating parts to a whole in their reading practice. These exercises were performed with faculty in the role of students.

Following the Spring workshop program faculty in the subject disciplines joined with basic skills teachers to teach a block programmed group of remedial students in Fall 1981. Ortiz, Miller and Schwartz met the same group of 22 triple remedial students for a total of 12 hours a week in order to achieve a continuity of method and approach in the areas of reading, writing and computer science. The emphasis throughout was on increasing self-awareness as learners rather than learning a specific body of material. Preliminary evaluation of this effort indicates that teachers in subject areas should expect to modify considerably their standard techniques if they hope to be effective in remedial education. The program will continue throughout 1982 to include a total of 24 faculty and 200 freshman remedial students.

Open Admissions: A Decade of Change (*David Lavin Graduate School and Lehman College and Richard Alba, SUNY at Albany NYUSA*)*:* David Lavin commenced by asking two key questions: What led to CUNY open admissions? What was open admissions? The "pure" period of open admissions was 1970-75; thereafter the fiscal crisis had an impact. This period was characterized by rising expectations and growing militancy of the disadvantage minorities. The material abundance of the 1960's promised benefit to the minorities without cost to the other groups. Minorities increased their participation in higher education.

The CUNY model was different from the national movement toward open access because it tried to avoid the sorting between two and four year colleges that took place elsewhere. It did this by retaining a student for a whole year regardless of academic record contrary to the semester "revolving door" policy of the typical state university.

The impact brought freshman enrolment from 20,000 to 35,000 in the years 1969-70. In 1975 over 40 per cent of the students owed their enrolment to open admissions. Over 50 per cent of entering students in 1970 were deemed below par in language skills. The per cent of Black and Hispanic enrolment rose sharply from 1970-75 with distribution between two and four year colleges about the same as for white students. Groups of white ethnics also increased sharply in numbers. While very few students in CUNY graduated in four years, the number of Black and Hispanic graduates doubled.

As to dilution of academic standards, the data do not permit an easy answer. A clear majority did not graduate. In the freshman year of 1973 not even one-half of the open admissions students earned a C average. During the financial crisis of the city, the Emergency Financial Control Board was indifferent to open admissions.

The then Board of Higher Education viewed the issue as free tuition vs. open admissions, i.e. instituting tuition would enable open admissions to survive or, said differently, the maintenance of free tuition would require a sharp cutback in open admissions enrolment.

In 1980 one-half of freshmen came from families with an income of less than $10,000, the same figure as for 1970. Given the inflation rate in that decade, this constituted a sharp increase in the number of students with poverty-level family income or below.

Research on Remedial Responses: Problems and Prospects Barry Kaufman, James Murtha, Michael Ribaudo (*Office of Institutional Research, CUNY*)*:* James Murtha introduced his talk by announcing that his team study would address the extent of administrative commitment and faculty involvment in open admissions. Clearly variations in schooling affected academic outcomes for ill-prepared students. Constraints of study are threefold. One was methodological stemming from 17 different campuses. A second derived from CUNY as a system or federation. Various campus policies and a central policy impeded cross-campus comparisons, e.g. rating procedures for full-time freshmen varied from campus to campus. The third and most important constraint was political. But CUNY was the major port of entry to higher education for the "high risk" disadvantaged in the area.

The year 1978 brought a testing skills program whose objectives were (1) to show differences between open admissions and regular students, predict their relative academic success (2) to identify institutional uniqueness and its impact on students and (3) to determine the relative effect of institutional student characteristics as against individual student characteristics or to explore whether remedial programs were integrated or not in regular programs (credit or non-credit).

The researchers have begun to analyze the accumulation of longitudinal data over a two-year period. Weaknesses that have developed are that multiple measures of academic success are not entirely reliable because of the short time span, incomplete data and interpretation and finally the need for more data on the students' social background.

Non-academic factors for SEEK students are the predictors for academic success. SEEK students are forced to more economic sacrifice than non-SEEK students because of foregone contribution to an already low family income. Consequently ways of offsetting such liabilities of the student should be explored.

Roger Lehecka (Columbia University): Open admissions began in promising times but evaluation came when often incompatible goals were thrown together. If judged by enrolment, open admissions is a success; if judged by graduation rates, it is less of a success. While open admissions may have diffused social/political explosions, perhaps a different system would have developed if open admissions had been permitted to grow with deliberate speed.

Did open admissions provide social mobility in job-seeking in the city? Was a particular form of open admissions adapted to the goals of open admissions?

If CUNY for a variety of reasons, financial for example, became more attractive to residents of the city, competition for places by open admissions students might take place.

Stenley Levison (Brooklyn College, CUNY.): It is ironic to express concern about remediation now, since education has long had this weakness. The lecture, textbook, content mode of teaching retards education at the primary, secondary and university levels.

Education must develop students ethically, aesthetically, and intellectually.

Reading is thinking. Since many of our students are illiterate, omni-media reading and learning must engage the student.

Process oriented education replacing lecture/content mode of instruction would stop the need for remediation and permit restating the purpose of the university.

Dean Richard Bossone (Graduate School, CUNY.): We should not blame the public schools. My research project is developing the relationship between schools and colleges by exploring student characteristics, outcomes, and learning process. The self-image of the student, the attitude of the student toward the school and toward the subject should be emphasized. Student low self-image improves when the student thinks well of his school and his subject.

An important question is what did the student bring to class. A significant recognition is that students learn in a non-linear way, while teachers learn in a linear way, or that there are several learning styles.

Frederick Wasser

AGRICULTURAL ENGINEERING RESEARCH AND THE ROLE OF AGRICULTURAL UNIVERSITIES IN INDIA

The scientific and technological transformation has prefound impact on the economic and social life of nation. Agricultural Science and technology particularly has shown a rapid transformation of industrial and professional organisations at the national level and, therefore, indeed a profound need of qualified personnel as agricultural scientists and engineers.

The Agricultural University is multifunctional system. The combined enrolment strength in all the Agricultural University in the programmes is approximately 20,000 with a highly desirable student faculty ratio is of 5:1 (Randhawa, M.S. Ibid, Chapter 28,29 & 30).

Agricultural Engineering is comparatively a recent discipline. The first Agricultural Engineer obtained his bachelor's Degree from the University of Allahabad in 1944 (at Allahabad Agricultural Institute where Agricultural Engineering degree course of 2 years duration was started in 1942.) In a span of little over 3 decades there has been a steady growth, keeping in tune with the national requirement of Agricultural Engineers. There are now 11 Agricultural Universities, most of them offering graduate and post-graduate courses in Agricultural Engineering. There are more than 300 qualified chartered professional agricultural engineers in the country.

A recent survey[7] indicated the employment pattern of Agricultural Engineers as under:

Table

		Percentage
(1)	Education, research & training	70 %
(2)	Govt. Department	18 %
(3)	Public sector corporations/agencies	10 %
(4)	Private sector	2 %
	Total	100 %

From the table it is revealed that this branch of engineeering is still under budding stage having minority of Agricultural Engineers in education, research and training and very few in Public and Private Sectors. In fact Agricultural Engineering has a wide plan. It covers Farm Power and Machinery, Soil and Water Engineering, Post Harvest technology, Farm Structures, Rural electrification and other energy sources. Indian Society of Agricultural Engineers established in 1960 is the only Professional Society representing the vocation. It brings together research scholars, academicians, government agencies, extension workers, manufacturers, Agro entrepreneures, Bankers, Farming institutions and self-employed engineers, including consultants. Its annual convention becomes an important national events.

In the shaping of the crop production function the impact of Agricultural Engineering Technology makes direct demand on the educational system. This in turn dictate the necessary job-training and more generally influence the requirement for technical and scientific education. This explains the in-extricable link of agricultural science, Agril. engineering technology with the agricultural education.

Role of education in the development of agricultural science and agricultural engineering technology: For the modern agriculture, agricultural science and Agril. Engineering technology is a pre-requisite. There are many indices to measure it. Chiefly, emphasis is laid on two fundamental rules that the agricultural universities can play in this regard i.e. (i) The direct role in providing a flow of Agricultural Engineering research results to the rural masses for which these universities are mandated. (ii) The supplier of highly skilled personnel needed for research and development activities in Agricultural Engineering.

It may be noted that the average rate of growth of output of agricultural science personnel during the past 25 years is increasing steadily. Agricultural Universities have helped bridge the gap between farmers and scientists, between agricultural research and its application in agricultural production. This has been accomplished by making the Universities and knowledge centres for rural areas and opening them to rural communities. Kisan Melas to popularise new agricultural techniques, improved implements, technical seminars, consultancy services to farmers, student and faculty visits to farms etc. are other activities of the Universities in addition to teaching. Thus the Universities devoted for agricultural science have three fold activities namely, Research, Extension and Education.

Research: There are two major streams of agricultural research in India today. The role of Agricultural Engineering is in the form of multi-disciplinary approach in it. The first of the major stream is the federal scheme under the administrative control of the ICAR. The council has over 35 Central Institutes functioning in different parts of the country. Central Institute of Agricultural Engineering, Bhopal (M.P.) is sole centre for research in Agricultural engineering. For the present the work is related to design, development, and testing of agricultural implements, post-harvest equipments, irrigation etc.

The second stream takes the form of a chain of Agricultural Universities atleast one in each of the larger states. Some like Maharashtra and Uttar Pradesh have four and three Agricultural Universities, respectively. Country as a whole has such 21 agricultural universities, out of which eleven universities are offering agricultural engineering courses.

A major development in the reorganisatin of the Agricultural research during the past 15 years has been the handing over of most of the research in the states to the Agricultural Universities which work in close collaboration with department of Agriculture. Also the ICAR has been organised so that formulation and management of scientific policies in the hands of scientists themselves are free from bureaucratic controls.

The Co-ordinated Approach: An important feature of the organisation of agricultural research in India today is that the studies being carried out in the Central Institutes and in the State Agricultural Universities which is fully coordinated through a series of All India Co-ordinated Research Project, sponsored by ICAR. During the fifth Five Year Plan period there were 51 such co-ordinated Research Projects operating in the Country.

Now a days extreme specialisation is going on in every field so is so with the Agricultural Engineering. These specialised fields are continuously growing and invading new territory. A central problem is one of the dissimination, diffusion and application of new knowledge.

Basic Approach: Problems and Solutions

In fact the problems of Agricultural Engineering having multidisciplines poses large number of problems. These problems may be initiated either by the research institutes themselves which may come under research development present and diffusion model or it may be brought individually or jointly by the farming community to the research centre which may be called as problem centred model. There would also be third possible way of getting the Agricultural Engineering problems oriented and solved; that is by social interaction model. The first two models have direct and quickest attack on the problems and they are made available to the users. Example may be given for the first model i.e. research, development and diffusion model where-in the problemstic soils such as saline and alkaline soils are to be improved. New farming technology evolved by the Agricultural Engineering College or new implement evolved which save times, money and energy and research is easily adopted on the larger area. Such problems may be intimated by the research centres and then diffused in the farming community. In other model i.e. problem centred model the farmers may face difficulty in soil and water management practice, cultivation of land in short period between harvest of kharif crop and sowing of rabi crop or farmer may be facing difficulty in finding out quick process of drying crops, handling of grains etc. jointly by the farmers and solutions to such problems are obtained at the Universities or research centres. Most of the time the delay in finding out the suitable solution to the problems may lead to and technologies are changing very fast. Use of insecticides, for newly evolved crop varieties may change frequently and such recommendations may become outdated as soon as new insecticide technique is evolved. Introduction of cross breeds of humpless bulb etc. have posed problem of hernessing the power. In the third model i.e. social interaction model, the innovations diffuse through social system and emphasis that the individual user and the adopter belongs to the net-work of social relations which influences his adoption behaviour. For ample adoption of improved implement or new technology of irrigation management by progressive farmer in the village influence the other farmers who are socially diffused amongst themselves. Through observation and over the new solution and new techniques are imparted to the users. Operational Research Projects, Training and Visits Projects could be viewed as examples of the third model. This model is so interlinked between the research centres and the farming community as well as other research workers that all the improvement and adoption of these researches into actual practice, its evaluation, assimilation, perfection, feed back of the problems go hand in hand. Such activities may revolutionwise the complete technology. It may have for reaching infacts in total modernization in agriculture.

In context with the agricultural research in India and agricultural engineering in particular the first model and the second model the velocity of technological change and the velocity of its diffusion in the farming community somehow are not with equal intensity and directions too. One very important point under consideration is that the borrowed solutions to the Indian problems in agricultural engineering in particular is not going to help much because the energy resources which comprise of animal and human energy as primary energy sources in Indian agriculture where as the solutions of other countries may match the energy pattern of these countries. In the first two models right sort of problem and the right research at right time must synchronise. This is one of the reasons why it takes too long for new ideas and research findings to be put to use by our farming community. Even now old age implements, farming technology is still continued. The production on trial and demonstration farms compared with farmers yield have very large gap. Some times the basic need of research demanded by the farming community is different and the solutions may be different. This may be due to difference in the socio-economic conditions.

Solutions: There are differeent ways of overcoming the difficulties involved in utilising available agricultural engineering and other allied knowledge etc.:

(1) Some information officers who are exclusively interested in research and extension work may be assigned only such jobs which will strengthen their interest in this discipline and substantial work can be extracted. If possible such posts may be created on permanent basis and really efficient scientists and agricultural engineers be appointed for longer period. It should become a regular feature of the university. If needed they may be trained by deputing them for training at International and national centres.

(2) University may be collaborated with some other agricultural university within or outside the country and experts in the discipline concerned be invited for certain period for consultation and exchange of ideas. This practice is available in few universities. This should become a regular feature of the University. Experts from the University should be given ample opportunities to attend conferences meetings of professonal bodies. Sumtuous funds may be made available for this programme.

(3) Particulary in the discipline of agricultural engineering, Research and Development department may be established as a regular feature and the agricultural engineering problems of short term and long term nature concerned with the farming community be taken up and monthly or quarterly progress report be published. An independent staff should be maintained for such work. This department may arrange T and V programme for farmers and rural unemployed youths and guide them in establishing their industries and other technical jobs in the rural areas. This R and D department in the Agricultural Engineering College should be linked up with R and D of the agricultural engineering industries and through proper coordination needs of the University should be tuned on common footing. This will help in reducing the time loss in the research work and knowledge gained by the technical personnels of both industry and university will certainly raise the standard.

(4) Agricultural engineering graduates and post-graduates should be given the research work in close collaboration with the agro-industries including fertilizer, insecticide

manufacturing industries. The problem may be decided on the mutual consultation with the technical personnels of the industry as well as university. The experimental set-up may be installed at the University or at the industry. Review and supervision may be done by the committee consisting of members of the industry and the University officers periodically. The product thus deviced may be the property of the industry. The benefit the student gets is his degree, apart from the knowledge gained by the student and the university staff. Benefit to the industry is that the new technique, procedure or product deviced becomes the substantial gain to the industry. The members of staff at the university gain more experience on the real problem and this can help university to update R and D by diffusion approach more effectively.

(5) The student trained under such atmosphere can do a lot as an extension man between the farming community, Agricultural Universities and research centres. He becomes the focal point for transfer of technology through long lasting network of social relations as the student himself comes from the society where-in all socio-economic relations are mutually linked up.

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EDUCATION—AN INPUT FOR DAIRY INDUSTRY IN INDIA

The present dairy education system in India (See figure) is supported by many organizations, in which the Indian Council of Agricultural Research is playing the lead role through the National Dairy Research Institute (NDRI), Karnal (Haryana). Various agricultural universities and other academic institutions also contribute substantially by offering Diploma, Graduate and Post Graduate degree courses related to Dairying.

The beginning of formal dairy education in India can be traced back to 1923 (Table 1) when the first batch of students was admitted to a two-year Indian Dairy Diploma (IDD) course at Imperial Dairy Research Institute (now NDRI), Bangalore. The professional course related to dairy cattle farming, breeding and management, processing and quality control of milk; and basic book-keeping. The syllabus of IDD course was updated to impart necessary learning to these diploma-holders to supervise the government run milk schemes which mushroomed during the early 1950s.

Ever since these diplomates have been making significant contributions in manning the Government administered urban milk schemes, cooperative and private milk product factories, particularly in the area of milk processing and marketing.

Table 1

DAIRY EDUCATION PROGRAMME IN INDIA

Sl. No.	*Dairying courses*	*Starting Year*	*Existing centres*	*Annual* output*	*Output* upto* 1981
1	IDD	1923	3	100	2400
2	B.Sc.	1957	2	80	1250
3	M.Sc.	1961	2	20	150
4	Ph.D.	1961	2	5	50
5	Other courses	1965	2	–	50

**Students passing out.*

Presently, the IDD course is offered at Aarey Milk Colony, Bombay, Allahabad Agri. Institute, Allahabad, and Bangalore and Harringhatta centres of N.D.R.I. In order to maintain uniformity in the educational pattern and the syllabus, the IDD programme is under the administrative control of Dairy Education Board of India. There are also well-planned university level courses available in India.

University Level

Dairy Plant Education: To meet the growing needs, a 3½ year comprehensive degree course in "Dairying" was started in 1957 at the Dairy Science College, NDRI, Karnal. During first year of the course, the students studied the fundamental principles of basic science subjects such as Physics, Chemistry, Mathematics, Economics and next two years in covering the applied subjects of Dairy Technology, Dairy Engineering, Dairy Chemistry, Dairy Bacteriology, etc. During the last six months, students underwent on-the-job orientation (in-plant training) in dairy factories. This course laid special emphasis on processing of milk and milk products and dairy plant engineering. The handling of modern sophisticated dairy equipments gives rise to numerous engineering problems of maintenance, operation of dairy machines, etc.

To meet such a demand for qualified Dairy Engineers, a specialized one-year post-graduate diploma course in Dairy Engineering was started. Later on it was abandoned in favour of an M.Sc. programme. Similarly, another post-graduate degree (M. Tech.) in Dairy and Food Engineering for engineering graduates is being offered by Indian Institute of Technology, Kharagpur, laying heavy emphasis on engineering aspects.

Dairy Husbandry Education: Though the Dairy Science rendered notable services toward enhancing and maintaining the efficiency of dairy factories, a wide gap was felt between the dairy factories and farms. It was deemed essential to rear healthy herds to produce high quality milk for profitably running the dairy plants. Consequently, in 1962, two separate 4-year courses—Dairy Technology and Dairy Husbandry—were instituted at NDRI to impart specialized skills and knowledge suited to the above tasks. The Dairy Husbandry course consisted of subjects like Dairy Cattle Nutrition, Breeding, Farm Management Practices, etc. The husbandry course was different from the traditional Veterinary or Agricultural Courses in the sense that it covered both these aspects specifically related to dairy animals only.

Today in addition to the Dairy Science College at NDRI three more colleges in Anand (Gujarat), Kalyani (West Bengal) and Udaipur (Rajasthan) are established which award B.Sc. (DT) degree. These colleges are affiliated to the respective universities in that area.

Impact of Dairy/Animal Husbandry Education

The B.Sc. Dairying Programme has shown great potentiality in fulfilling its obligations to the country's milk industry. It has provided the necessary skills to the youngesters who supervise the smooth operation of various sections of the dairy factories and hold some of the key positions in the industry. Many 'foreigners' employed by the private sector dairies were promptly replaced by these young 'Indian' dairy graduates who subsequently occupied top level management positions.

M.Sc. and Ph.D. degrees in Dairy Science provide opportunities to highly qualified men to undertake research and development activities. The dairy education in India has also completely taken over the responsibility of training the dairy scientists who were earlier trained abroad.

Today, Dairying students are equipped with multi-disciplinary education exposing them to modern knowledge in Science & Technology. Such an education has provided the best available care to our cattle population. Inclusion of courses on biological products vaccines, cattle feed technology, etc. has added a new facet to the career of a dairyman. The present curriculum in the dairy science and animal husbandry areas has given the students the confidence to face all occupational problems in the research, development and other operational areas.

New Dimensions of Dairy Education

Manpower Development: The manpower development for dairying in future must aim at providing specialized training for men of all these levels to specially suit the job requirements. The basic principles underlying such training should be to provide 'situational learning' for these young men. This type of training is highly job oriented where the young men are exposed to the day-to-day situations of handling men, jobs, technical skills, etc.

The manpower planning programme should be reviewed qualitatively and quantitatively in order to meet the changing and increasing employment opportunites. With the launching of Operation Flood to create White Revolution in India, there is a tremendous need of qualified men to handle various specialized tasks concerning the dairy projects to be implemented in various parts of our country. Therefore, National Dairy Development Board is actively engaged in developing the manpower required to handle the various projects which are being executed in different milksheds in the country. The manpower planning calls for preparing organizational structure charts for the various projects to be handled in future and the exact number of staff required at all positons i.e. from the General Manager to village level technicians. At a later stage, manpower resource survey is conducted and the required staff is then recruited as per the organizational structure.

The Action Plan: One of the important tasks of the manpower development is to select and train the staff required to run the farmers organizations. The salient function of the Technical and Manpower Development Division of NDDB is to expose the trainees to "situational learning". During the training programme, the trainees are imparted knowledge concerning the technical aspects of the dairy industry. This class-room learning covers 12 to 15 per cent of the training duration. During the remaining period, the trainees work in their respective specialized areas in a dairy organization. At times, they also work with the senior officers of the dairy organizations and follow their technical and administrative routine. Such diversified training provides the needed confidence to these trainees in handling future day-to-day occupational problems. The need for manpower development is envisaged in two broad areas; the young new entrants and the in-service personnel. The former undergo one-year apprenticeship and the later undergo short term custom-made refresher courses. The apprentices are grouped into following categories, indicating their areas of activities and specializations:

(1) Category (I) Managerial positions (Masters of Business Administration/Chartered Accountants/Engineers and others)

(2) Category (II) Middle level management positions (Dairy Technologists/Engineers/Animal Husbandry/Agriculture).

(3) Category (III) Supervisory level positions (Dairy Technologists/Engineers/Milk Procurement Assistants)

(4) Category (IV) The floor/field staff (Technicians)

NDDB is the largest training centre and the facilities at this centre have been expanded from time to time keeping in view of the increased demand of trained personnel. This centre organizes programmes (Table 2) for executives from dairies and cattle feed plants at various levels: programmes for farmers' induction, orientation, apprentice training, procurement and input training, etc. Practical training is provided during their on-the-job training. NDDB utilises infra-structural facilities of Cooperative Milk Unions, dairies, cattle feed plants input centres, etc. and other functional departments for conduting the different training programmes.

Table 2

DAIRY TRAINING PROGRAMME AT NDDB

S.No.	*Training Programmes*	*Trainees (upto March 1982)*
1.	Dairy Plant Personnel	300
2.	Cattle Feed Plant Personnel	32
3.	Dairy Auditors	250
4.	Frozen Semen Technologists	200
5.	Milk Procurement & Technical Inputs	1,800
6.	Aritificial Insemination & Veterinary First Aid	2,000
7.	Semen Lab Technicians	100
8.	Cluster Federation Apprentices	250
9.	International trainees	300
10.	General programmes	2,100
11.	Farmer's Induction Programme	20,000

Duration: Varies from 3 to 12 weeks, except FIP (2 days).

Training Programmes: The training programmes for various level dairy personnel conducted by the NDDB are:

Managerial level : Dairy & Cattle Feed Plant Managers, Senior Officers of Milk Plants, Senior Officers of Cattle Feed Plants, Category I of the Composite Spearhead Team

Supervisory level : Junior Officers of Milk Plants, Junior Officers of Cattle Feed Plants, Milk Procurement & Technical Inputs Staff, Dairy Auditors
Frozen Semen Technologists

Categories 2 and 3 of Composite Spearhead Team

Field/floor level : Dairy Plant Technicians

Sachet Machine Technicians

Livestock Inspectors

Field Assistants

Artificial Insemination & Vety. First Aid Assistants
Semen Lab. Technicians

Category 4 of Composite Spearhead Team

During each phase of the training, the evaluatin of their performance is done to ensure continuing interest and the extent of receptivity of the apprentices.

Other specialised programmes : Farmers' Orientation Programme
Farmers' Induction Programme

For maintaining the effectiveness of training in any organization, periodic revamping has to be undertaken with regard to:

(i) the content; and
(ii) the communication

Contentwise, the trainer has to be on constant lookout for adding new dimensions to the existing teaching material. In addition, new training programmes will have to be added to the existing courses.

With the fast increase in technological specializations, the industry is constantly demanding more number of training programmes. This involves the study of existing magnitude of demand for new training, establishing the objectives, assessing the academic and technical level of trainees, formulating the course outlines, and arranging the course contents in order of priority.

The next important decision is to choose the style of communication to be adopted between the trainer and the trainees. The group and the panel discussion, case study, problem solving, role-playing & simulation have been found to be very effective tools in bringing home the complex job-oriented issues. The judicious use of simple audio-visual teaching aids has also been found to facilitate the communication. The non-conventional methods like "seeing is believing" and "learning by doing" on-the-job situations have proved to greatly improve the job performance and confidence of the candidates.

As of today, most of the effective and desirable training pre-conditions and facilities for the dairy education are aptly available in India and have been meeting the training demands of the industrial set-ups.

Institute of Rural Management, Anand

With the future manpower projections at hand, the NDDB felt that another special cadre of skilled personnel would have to be created. They would be trained to become professional managers to streamline the supply of inputs needed for farm production and also to regulate and control the market of farm produce in a manner suitable to farmer as well as the urban consumer. Consequently, an institution—Institute of Rural Management, Anand (IRMA)— has been established in 1979. The IRMA awards two-year postgraduate Diploma in Rural Management. The graduates from all branches of academic specialization, but possessing aptitude for rural work, are admitted to this course. The first batch of 48 students has received diplomas in February 1982 from Mrs. Indira Gandhi.

The Indian Institutes of Management at Ahmedabad, Bangalore and Calcutta also conduct courses to train young graduates to become professional managers to suit the agro-based industry.

Conclusion

(i) While planning the employment-oriented education for the dairy industry it should be ensured that the students are well-acquainted with the basic principles and practices which help them tackle various problem during their professional career in the dairy industry. No specific branch of academic study can make the graduates directly suitable to meet the requirements of the industry. To achieve this aim, proper training and experience is essential to develop their skills after completing the formal ecucation.

(ii) Usually, much care is taken before a university level programme of formal education is drawn up. Similar care and proper review are also essential while preparing syllabi at under-graduate level.

(iii) Presently there is no provision to switch over from one field of specialization to the other. The students therefore should be provided with greater choice in selecting and changing the elective subjects to flourish their talents.

(iv) There should be a free exchange of teachers and qualified personnel between the industry and academic institutions. Such an exchange will prove mutually beneficial, and the students graduating with this type of training would be much more realistic in approach to their job specifications.

(v) Frequent programmes should be undertaken for the in-service training of qualified and experienced personnel. Such programmes are necessary not only to improve the education patterns but also to bring out many common problems related to research, education and industry.

S.V. Pilkhane

ON SELECTION OF CANDIDATES FOR PROSESSIONAL EDUCATION

In recent years, it has been observed that there is a general tendency, among the students to go for Professional education after the secondary stage of education is over. In Assam scope of professional education is comparatively limited. The three main professional educational fields which are attracting large number of students for last few years are—Engineering, Medical and Agriculture including veterinary science.

The minimum educational qualification specified for admission into degree courses in all these three professions is same. A candidate seeking admission to these courses must pass the Higher Secondary School Leaving Certificate Examination/Pre-University Examination/Pre-Degree Examination in Science group. Further restrictions imposed are that a candidate seeking admission in engineering must pass in Mathematics, Physics and Chemistry in the qualifying examination and a candidate seeking admission in medical and agriculture must pass in Biology, Physics and Chemistry in the qualifying examination.

Every year a large number of applications are received from candidates possessing the prescribed minimum requisite qualification for admission into these three professional degree programmes. All applicants cannot be accomodated due to limited number of seats. Thus it becomes necessary to select the best ones out of the lot.

The simplest procedure of selection is to prepare a merit list of the applicants on the basis of the marks obtained by them in the qualifying examination and to select the top ones from the merit list according to availability of seats. This procedure of selection has been being followed in the Faculty of Agriculture of Assam Agricultural University for last few years.

The second procedure of selection may be to hold a further admission test amongst the qualified ones and to select students on the basis of results in the admission test. This test may be termed as aptitude test. This procedure of selection has been being followed for admission into Engineering Colleges in the state.

The third procedure of selection is to prepare a merit list of the qualified applicants on the basis of marks obtained in certain subjects in the qualifying examination. These subjects are considered as relevant to the profession. Physics, Chemistry and Biology are considered as relevant subjects for Medical Colleges. Selection of applicants are being done by this procedure for admission into Medical Colleges of Assam.

In this paper an attempt is being made to examine how first type of selection works. For the purpose correlations between the scores of the qualifying examinations, the scores obtained at the first examination in the degree programme and the scores at the end of the degree programme of the same batch of students are being studied.

Data for Study

For the present study the first batch of agricultural graduates completing study under the Semester system of instruction has been considered. This batch qualified for the batchelor degree in agriculture in the year 1981-82. Marks obtained by 22 students of this batch in the qualifying examination were available. The study was based on this group of 22 students. Those 22 students were admitted into the first year class of the degree programme in the year 1977-78. All these students had their secondary education namely Higher Secondary/Pre-University/Pre-Degree in traditional type of instruction, that means they had to appear in final examination after two years of instruction after completion of the High School Leaving Certificate examination. Besides upto that stage the students had vernacular as their medium of instruction. Percentage of marks obtained by these students in the qualifying examinations were collected.

The students after admission to the degree programme in agriculture had to undergo changes in the system of instruction. In place of traditional system, now the Semester system was followed. In this system each academic session is divided into two parts each called a semester. Courses are earmarked for each semester. Examinations are held on each course during the semester and students are graded. The ultimate result at the end of the degree programme is declared on the basis of performances in all the semesters of the whole programme. While in the qualifying examination the evaluation was external in the semester system the evaluation was internal. Another important change was that the medium of instruction was English this time.

For the present study performances of students in the degree programme have been considered at two stages. First, it has been attempted to examine how the students have performed in the first examination in the degree programme under the new system. Next, attempt has been made to examine the overall performances of the students in the whole programme. For the purpose the Grade Point Averages (GPA) of the students at the end of the first semester and the overall Grade Point Averages (OGPA) at the end of the degree programme were collected. It may be mentioned that while in the qualifying examination the students were evaluated by giving marks in a percentage scale, in the semester system the students were evaluated by giving grades, namely A,B,C,D,F with correspoinding numerical value 4,3,2,1, and 0 respectively called points. Grade point average was calculated by dividing the sum of products of grade-points obtained in a course and number of credit hours allotted to the course by the total number of credit hours allotted to all the courses in the semester. Similarly, overall Grade-Point-Average was calculated by dividing the sum of products of grade-points obtained in a course and the number of credit hours allotted to the course for all the courses in the whole degree-programme by the total number of credit hours in the whole degree programme.

Below are the recordes of scores of 22 students in the qualifying examination, the first semester examination and at the end of the degree programme.

Table 1

Sl. No.	*P.C. of marks at qualifying examination(X)*	*G.P.A. at the end of First semester(Y)*	*O.G.P.A. at the end of the Degree Programme(Z)*
1.	53·6	2·94	2·99
2.	62·1	3·18	3·80
3.	63·1	2·88	3·48
4.	63·1	2·76	3·47
5.	61·4	2·94	3·48
6.	68·8	2·88	2·99
7.	53·5	2·59	2·91
8.	52·4	2·94	3·56
9.	63·4	3·12	3·61
10.	60·0	3·00	3·52
11.	59·2	3·70	3·74
12.	59·2	2·70	3·40
13.	58·0	1·94	2·90
14.	58·4	2·94	3·20
15.	58·0	2·06	2·65
16.	58·9	3·06	2·95
17.	58·5	3·23	3·55
18.	58·6	3·18	3·44
19.	58·2	3·35	3·51
20.	58·1	3·29	2·40
21.	51·5	3·12	3·37
22.	55·7	2·47	2·47

Results

Ranges of percentage of marks, GPA and OGPA are 17.3, 1·76 and 1·40 respectively. The means in the three cases are 58·80, 2·88 and 3·25 and the standard deviations in the three cases are 4·02, 0·41 and 0·40 respectively. The coefficients of variation in the three cases are found to be 7%, 14% and 12% respectively.

By examining the coefficients of variation, it is observed that the batch was more consistant in the qualifying examination. Variation was highest in the first semester scores and it reduced a little in the overall result of the degree programme. The results tally with expectation. The students being exposed to a new system find difficulty in adjustment but makes up with time. Causes of variation being more in the ultimate scores than in the qualifying examination may be due to the fact that the students are to take some new courses in each semester and OGPA is based on performances on all the 8 semesters spread over the degree programme.

Since the scales of scores in the three examinations are not same, the ranges as shown above cannot be compared to have an idea about spread of the scores in the three cases.

For comparability, the scores are being converted into standard scores by the following formula:

$$\text{Standard score} = \frac{\text{Score in the original scale—Mean}}{\text{Standard Deviation}}$$

In this conversion a good number of standard scores come out as negative. To avoid negative sign 5 has been added to all the standard scores so that all figures come out as positive. With this transformation the standard scores are obtained as follows:

Table 2

STANDARD SCORES OF THE 22 STUDENTS

Sl. No.	*Qualifying exam.*	*1st semester*	*Final degree*
1.	3·70	5·15	4·35
2.	5·82	5·73	6·38
3.	6·07	5·00	5·58
4.	6·07	5·29	5·53
5.	5·65	5·15	5·58
6.	7·49	5·00	4·35
7.	3·68	4·29	4·15
8.	3·40	5·15	5·78
9.	6·15	5·59	5·90
10.	5·30	5·29	5·68
11.	5·10	7·00	6·23
12.	5·10	4·56	5·38
13.	4·90	2·71	4·12
14.	5·10	5·15	4·87
15.	5·20	3·00	3·54
16.	5·02	5·43	4·25
17.	4·96	5·85	5·75
18.	4·95	5·73	5·48
19.	4·85	6·15	5·65
20.	4·83	3·57	7·13
21.	3·18	5·59	5·30
22.	4·23	4·00	6·95

Ranges in the three cases are 4·32, 4·29 and 3·59 respectively. The range is smallest in the Final degree. This might be due to adjustment of the students with the system in course of time. In the other two cases the spread is almost similar.

To examine how the scores of two examinations correlate the correlation study is being done. Correlations between scores in qualifying examination and first semester examination, between qualifying examination and OGPA and between GPA of first semester and OGPA are being calculated.

The scatter diagrams obtained by taking the scores of qualifying examination (X) and first semester GPA (y), qualifying examination (x) and OGPA (z) and first semester GPA. (y) and OGPA (z) are being shown below:

Correlation coefficients between scores obtained in qualifying examination (x) and scores in first semester (y), between scores in first semester (x) and scores at the end of the degree programme (z) and between scores in first semester (y) and scores at the end of the degree programme (z) are found to be 0·11, 0·22 and 0·76 respectively. This shows that the correlation between performances in the qualifying examination and the first semester although positive, is low. The correlation is a bit high between performances in qualifying examination and at the end of the degree programme. The correlation is quite high between performances in the first semester and at the end of the degree programme.

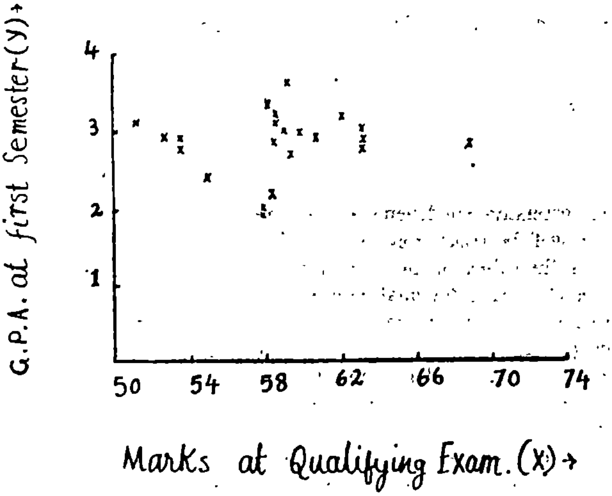
To examine how the performances of individual students correlate in different examinations or in other words to examine whether a student could maintain his performances in subsequent examinations in relation to qualifying examination, rank correlation coefficients were calculated. The students were ranked according to their performances in the three cases. Ranks of the students in the three cases are as follows :

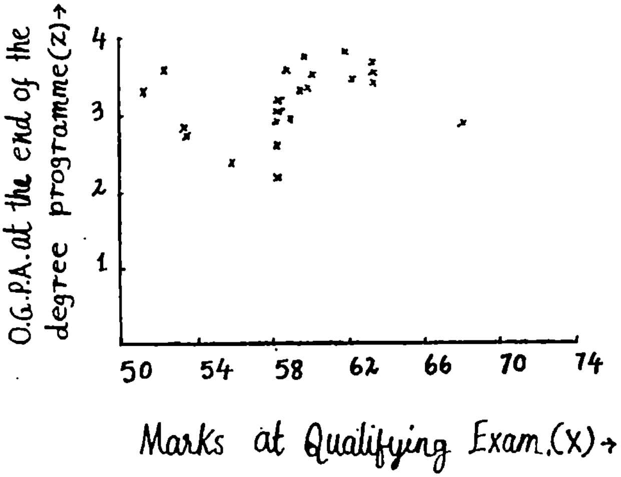
Table 3

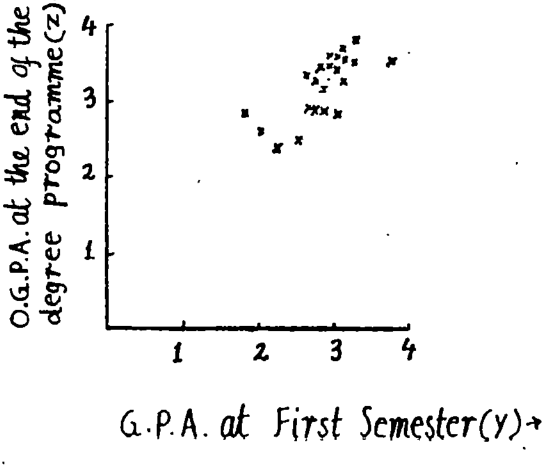
Student No.	*Rank in Qualifying Examination*	*Rank in First semester*	*Rank in OGPA*
1.	19	11·5	15·5
2.	5	4·5	1
3.	3·5	14·5	3·5
4.	3·5	16	10
5.	6	11·5	8·5
6.	1	14·5	15·5
7.	20	18	18
8.	21	11·5	4
9.	2	6·5	3
10.	7	2	6
11.	8·5	1	2
12.	8·5	9·5	12
13.	16·5	22	19
14.	13	11·5	14
15.	16·5	21	20
16.	10	8	17
17.	12	3	5
18.	11	4·5	11
19.	14	2	7
20.	15	20	22
21.	22	6·5	13
22.	18	19	21

The student who ranked third in qualifying examination also ranked third at the end of the degree programme. Similarly, the student who ranked eleventh in the qualifying examination, also ranked eleventh at the end of the degree programme. Only in one case namely, the student ranking eighteenth in first semester also ranked eighteenth at ultimate result at the end of the degree programme. None of the students had the same ranks in the Qualifying examination and the first semester results.

On calculating the rank correlation coefficients between ranks in qualifying examination and first semester results, between qualifying examination and ultimate result of the degree programme and between first semester result and ultimate result, it was found that all correlation coefficients were positive. The values of the correlation coefficients in the three cases were found to be 0·25, 0·47 and 0·95 respectively.


G.P.A. at first Semester(Y)→
4
3
2
1
50
54
58
62
66
70
74
Marks at Qualifying Exam.(X)→


O.G.P.A. at the end of the degree programme(Z)→
4
3
2
1
50
54
58
62
66
70
74
Marks at Qualifying Exam.(X)→


O.G.P.A. at the end of the degree programme(Z)→
4
3
2
1
1
2
3
4
G.P.A. at First Semester(Y)→

From the values it can be inferred that the students maintain more or less similar positions in the ultimate result as they did in the first semester result. Positions in the qualifying examination also have a similar trend at the end results but it is lower than the preceding case. Ranks in the qualifying examination and the first semester results vary widely.

Conclussions

The various correlation coefficients are positive. This shows that merit at the qualifying examination may well be considered as an indicator of results at the end of the degree programme. From the values of the rank correlations it is further observed that although there is deviations of ranks at the qualifying examination and the subsequent performances, there is significant correlation between ranks at the qualifying examination and at the end of the degree programme. Rank correlation between ranks at the first semester results and ultimate O.G.P.A. is almost perfect, being 0·95. From the values of various correlation coefficients and other measures namely, range, standard deviation etc. it may be inferred that although the students initially may find some difficulty in maintaining their merit at the first semester results in the new system, they ultimately make up and show a positive relationship between results of the three examinations.

B.K. Bhattacharyya

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Book Reviews

Communicate 1 & 2, by Keith Morrow and Keith Johnson, Cambridge: Cambridge University Press, 1980. pp. 155 and 156. Price £2.95 each.
Think and Link, by Janelle Cooper, London: Edward Arnold (Publishers) Ltd., 1980, pp. 54. Price £ 1.95.

The authors of *Communicate,* Keith Morrow and Keith Johnson of the University of Reading, are well known for actively championing the cause of *functional* syllabus as a basis for general course design. The material they offer in the two parts of *Communicate* including three cassette tapes is a sort of 'specific purposes' course, aimed at teaching Intermediate level students English for social interaction.

Designed with the comunicative approach to language teaching, the books teach the student how to use English in a variety of situations for a variety of purposes: for example, how to find out things, how to ask people to do things, how to suggest things to people, how to offer help, how to say what one likes or doesn't like, how to ask for permission, how to introduce oneself and other people, how to make arrangements, appointments, and bookings, how to invite a person or say good-bye, how to express surprise, regret or give advice, and the language of such other socio-cultural events. *Communicate* also provides a lot of useful information about living in Britain, such as how British people behave in shops, railway stations, restaurants, and other places; how to use telephone, how to see a doctor, how to book a taxi.

Each book consists of 15 units including the Consolidation units. Each main unit, constructed to introduce the language appropriate to expound the communicative function, is in two sections, one *situational,* teaching the language needed in various places (e.g. shop, railway station), and the other, *functional,* teaching the language needed to *do* things in English (e.g. inviting, persuading). Its exercises de-emphasise language learning through the traditional grammar and vocabulary practices. Students are expected to work in pairs or in groups. Consolidation units present listening comprehension and role-play exercises besides isolating grammar points for practice. Though the course gives due attention to learner's receptive and productive skills, listening and speaking are the chief concern. Tapescripts are given at the end of each book.

One may, however, notice that *Communicate* is deeply culture-bound as it emphasises learning to communicate with British people "about their way of life". In fact, it is "for people who want to learn to use English in Britain, or who are simply interested in finding out about the way British people use the language". Yet, the merit of the book for students in EFL and ESL settings is immense in that they learn such functional skills that are generally neglected in their English courses.

The purpose of the book, communication, is very worthwhile, and *Communicate* can be successfully used in Indian institutions as a supplement to the existing programmes at Intermediate/undergraduate level. It's widely felt that a functional method imposed on the existing method will make students know *how* the language is used, even if teaching with *Communicate* may demand readjusting the prevalent teaching method with more effective novel methods. Even its partial adoption by English language teachers in our colleges will counteract certain potential deficiencies in the existing English teaching programme. The book meets certain socio-linguistic needs of our students, particularly of the large section of students from rural areas. Either book may be used independently of the other.

The physical appearance of the book, and Martin Salisbury's drawings for each unit contribute much to the appeal *Communicate* has for students and teachers alike.

Think and Link, meant for post-intermediate overseas students of EFL/ESL, aims at teaching to read and write English efficiently "by focusing on the organisation of ideas and information in written English". The author, who is herself an experienced teacher of EAP and EFL, rightly maintains that many students "can write grammatically correct sentences but fail to progress in English because they are unable to organise their ideas in a manner acceptable to an English reader. Similarly, though they understand individual sentences, students fail to comprehend extended pieces of writing because they are unable to see the organisation of the ideas." She claims that *Think and Link* will help such students.

The book is also claimed to be valuable to students (a) who are studying or going to study other subjects through the medium of English in their own countries or in an English-speaking country, (b) who are going to take examinations such as the Cambridge Certificate of Proficiency and the Joint Matriculation Board Test in English, and (c) who need to use written English in their job.

The short, informative texts interspersed with suitable drawings, diagrams, tables and graphs, comprising the book, are organised under four main heads: (a) Sequencing, (b) Classification, (c) Comparison and Contrast, and (d) Cause and Effect. These are in order of difficulty, from easier to more difficult, involving active learning from students.

The material of Sequencing section deals with sequence in writing instructions (using imperatives), processes (using the simple present tense and passives), and past events (using the past tense and participal forms). It has 14 units with appropriate graphic presentation, helpful in ordering and remembering information. The exercises for practice do make students *think.* They not only learn the organisation skills but also get opportunities to transfer these. For example, they learn how to convey information through devices like charts, tables, graphs by actually making them. The grammatical points i.e. use of imperatives, use of present tense or past tense, passive voice etc. are not taught but *used:* students learn these by doing.

The material of Classification section in 11 units helps to develop the skills necessary for describing, classifying, categorising, exemplifying, defining, and using information to write appropriate texts. Students notice the use of countables, uncountables, articles, as also how words are built in English.

The reading material in the section Comparison and Contrast is organised in 13 units, offering the linguistic techniques used to express similarities, differences, concessions, and analogues. Besides encountering the comparatives of countables and uncountables, students learn the important linking devices that make a text cohesive.

The 13 units of the Cause and Effect section teach the forms of modality: connectives to indicate consequences, linking words to indicate cause and effect, words to indicate degrees of certainty, and the verbal devices used to explain, refer, and elaborate are the main concern.

Think and Link, with its culturally unbiased material, intergrates comprehension and expression: skills of reading and writing are blended. The reading is preceded and accompanied by a reasonable exposure to appropriate models of written language. The book is appealing in that it presents how to use linguistic tools and discriminate between tools in constructing a stretch of language that forms a piece of coherent communication with unity and internal organisation. In the process of the controlled and free exercises, both short and long, students also learn some of the techniques of note-taking and summarising. On the whole, this advanced course in reading and writing skills, with necessary adaptation in the Indian context, should prove to be a valuable addition to ELT programme.

R.K. Singh

Academic Promise and Fulfilment, Nagpal, R.N., New Delhi, New Society Publications, 1981, 139 p. Rs. 48/-.

Of the plethora of researches on psycho-social correlates of academic under-achievement and failure, one can figure-count such studies on engineering students. Dr. Nagpal deserves to be complimented for his doctoral study 'Some Non-intellectual Characteristics of Over and Under-achieving Engineering Students' at Indian Institute of Technology, New Delhi, which he has published in modified form as 'Academic Promise and Fulfilment'. Scrutinizing the 1971 & 1972 cohorts of admission to the I.I.T., Delhi for identifying students who showed high academic promise at the time of entrance to the Institute but did not fulfil it in terms of academic achievement, the study highlights various factors accelerating or retarding academic performance. The author has very aptly drawn our attention to under-utilization of talent at engineering institutions which attract promising students with brilliant performance who, later on, due to various psycho-social problems, fall short of their goal causing frustration and wasteful utilization of time, efforts and above all, financial resources which a society like ours can 'ill afford'.

The modified volume contains seven chapters, appendices, references and subject index. The first chapter deals with a set of intellectual, non-intellectual and environmental factors, explains the concept of over and under-achievement and presents a brief resume of researches on academic promise and fulfilment. Falling in line, the second chapter takes the theme a little forward by reviewing some studies on student factors influencing performance. No doubt relevant, the review could have been enriched by incorporating some important recent researches on the subject, and the splitting the chapter into two could have been avoided. However, chapter III presents comprehensive picture of the present study by highlighting its objectives, procedure for sampling, tools of study and hypotheses. The study aimed at (i) studying the incidence of such students who show high promise at the time of entrance to the I.I.T., Delhi but do not materialize it in terms of academic achievement, (ii) discovering the various psycho-social factors associated with such under-achievement and (iii) finding out significance of intellectual and non-intellectual factors in determining over or under-achievement. The sample for the study was selected from 1971 and 1972 intake of the I.I.T., Delhi, on the basis of mean deviation of students between their joint entrance examination grade and the fourth year cumulative grade. Thus the two extreme groups of over-achievers (N=60) and under-achievers (N=37) constituted the total sample of the study. Data were collected through a semi-structured psycho-social questionnaire, two structured personality tests viz., Students Personal Problem Index (by Wig and Nagpal, 1970) and Personal Orientation Inventory (by Shostrom, 1966), and personal interviews to test six hypotheses formulated on the basis of the objectives mentioned above.

The findings of the study have been presented in chapter IV which contains comparative data of over and under-achievers on various variables. Contrary to the common belief, ability measures in this study to account for a limited proportion of the total variance in academic achievement at college level. The same result has been obtained by me at higher secondary level. The most important factor having bearing on academic achievement, as found in the study, is academic adjustment. Others factors which have been found to be important for the student's effectiveness in acquiring knowledge but are not directly related to his academic over or under-achievement are his personal orientation, developmental growth and interest in the subject. Under-achievers have been found to report greater number of emotional problems which are typical of their age.

The subsequent chapter contains five interesting case studies of over and under-achievers each collected through interview with students. The factors which differentiated over-achievers from under-achievers were their regular and organised study habits, regularity in class work and lecture notes, use of typical study methods, clear conception of occupational goal, their source of inspiration and inner motivation. On the basis of data presented in chapters IV and V., the sixth chapter tests the hypotheses one by one. The final chapter presents summary of findings: Nearly ten per cent of the students under-achieve at I.I.T. Delhi on the criterion of mean discrepancy between grades obtained in the admission test and the 4th year cumulative grades.

Ability measures account for a limited proportion of the total variance in academic achievement at the college level.

The present academic adjustment of the student is an important correlate of over or under-acheivement.

The under-achievers report greater number of emotional problems typical to youth.

The over-achievers have a personal orientation that indicates their fuller functioning than the average student. They go through life more independently. They have a better realisation of the desirable hierarchical order of goals. They are more aware, have a basically constructive nature of the man and are relatively more able to strike a synthesis between play and work.

The socio-economic variables relating to the student operate as selector variables but are not relevant to his subsequent academic performance.

The student's developmental growth from psychological dependence upon parents to independence, seems to be relevant to his later academic effectiveness. Students with a history of poor academic adjustment are more likely to under-achieve in college students.

The academic achievement at the college level is more dependent on the student developing an interest in a specific subject during studies rather than on having it as subject of first preference at the time of admission.

The adjustment of student of the various academic and other aspects of the college milieu is an important factor in determining his academic achievement. The better adjusted students exhibit high interest in the subject matter of study, have positive attitude towards the requirements of curriculum and get along well with teachers and peers.

The non-intellectual factors relating to the student are specifically pertinent to his effectiveness in the role of acquiring knowledge. These are also significant in his over or under-achievement.

The case history technique of collecting data seems to hold better promise for understanding the non-intellectual characteristics of the over-or under-achievers. The author recommends that adequate and effective student counselling should be provided at the I.I.T. to optimally utilize talent of students. However, he has not elaborated upon the provision of such facility.

Appendix 'A' is repetition of the review of researches presented in first two chapters which could have been avoided either by reviewing all the researches in the end or by making the review a little more elaborate in the initial two chapters. However, it would be useful for those deeply interested in the subject. Appendices B to D contain questionnaires used in the study which provide helpful tools for researchers interested in the area. References and subject index form concluding part of the book.

Though based on a scientific study, the book makes interesting reading and would be useful for educationists, psychologists, psychiatrists and research workers interested in improvement of academic performance of promising students.

Radha Rani Sharma

Relevance in Social Science Research. Institute of Economic Growth, New Delhi: Vikas Publishing House, 1982, pp. 374 + ix. Rs. 125/-.

The founding fathers of Sociology had envisioned for it a role whereby Sociology was to be vitally concerned with the resolution of social problems and achievement of social progress on the basis of discoverable and well-formulated laws. In addition to Comte's and Durkheim's faith in the new discipline, Sociology was also the recipient of Marx' passion for changing the world and not merely understanding it. Much the same could be said of Economics also. It too was born out of a concern for human welfare. This pedigree notwithstanding, both these disciplines developed doubts whether, as scientific endeavours, they had anything at all to do with the search for use fulness and social action. To many sociologist and economists, science became limited to the search for "truth only. The desire to imitate the natural sciences gradually led the social sciences into an artificial dichotomy between the "fundamental" and the "applied". Not unexpectedly the "fundamental" became more prestigious and popular; simultaneously, it also became a cover for much that was trivial and irrelevant. As long as society was not characterized by rapid social change, and developmental processes were minimal, social scientists could afford the luxury of indulging exclusively in the so-called fundamental or basic research. But events are finally catching up with them, and now they cannot easily escape their responsibility to integrate theory and practice, research and policy. In a country like India, where after thirty years of development, abysmal—perhaps everlasting—poverty stares us in the eye everywhere, concerned social scientists are seized with doubts regarding the utility—the Relevance —of what social research has achieved. These doubts, as in the past, are not a manifestation of status-panic but are an expression of maturity and commitment both of which generate a realistic and creative introspection. The volume under review is a record of such introspection occasioned by a colloquium organised by the Institute of Economic Growth (Delhi) to examine the problem of relevance in social science research.

Two issues, we are informed in the foreword, were mainly under discussion. First, the relevance of western approaches, methods and techniques for understanding the vast discussions of the socio-economic problem facing India. And, second, whether the questions thus far raised by Indian social scientists have "put into the centre of enquiry the interests, needs and aspirations of the people of the developing countries..." Both theoretical and substantive papers have examined these and allied issues. In this brief review it is proposed to highlight some aspects of the former only.

Considering that the very concept of relevance bristles with difficulties, Sukhamoy Chakravarty has made a valuable contribution by explicating three meanings of relevance. First, relevance is an "expression of broad societal concern" which is a basis for "adopting a transcending position." The second definition arises "if we adopt the point of view of a policy planner who wants to ground his advice an adequate analysis." The third definiton is that of a political activist who wants to charge things but he is conscious that he must understand them to be able to alter them. In the framework of these three meanings, Chakravarty has surveyed research Indian economists, and found it to be rather unrelated to existential problems.

Yogendra Singh has addressed himself to the problem of raising the "right" questions. For Singh the notion of relevance in social science is a product of double dialections: (i) Social Sciences as epistemological systems and (ii) as ideologies. Relevance at the epistemological levels directs our efforts towards examination of the validity of concepts and methods in terms of their universality, historicity, and cultural specificity of most social science concepts and theories, Singh argues that "one measure of relevance for Indian social science should be to search for autonomy and indigenization of paradigms and methods of social enquiry." (p. 40). In this case, what are we to do with questions that Marxists raise?

The economist C.T. Kurien has taken an aggressive stand on the polarity between "fundamental" and "problem-oriented" research. Dismissing the dichotomy as invalid in the social sciences he asserts that "the subject matter of social sciences is—must be—actual social issues, however, mundane and non-theoretical they may appear to be." (p. 62)—T.N. Madan, who served as a discussant, offers a humanistic view point. Holding that "every act of development is also an act of destruction", Madan observes, "We must self-consciously choose what we would like to preserve and develop and what we would like to see changed or destroyed" Relevance to Madan lies in attending to questions of this kind.

Finally, there is P.C. Joshi for whom the main thrust of relevance lies in our being concerned with the need and ability to ask the right questions, and having asked them to be able to deal with them appropriately. Unlike Singh, however, Joshi has ideological predilictions. "In a class dominated social situation," he observes, "class sympathy becomes a necessary condition for formulating the right type of questions for social enquiry." Joshi pleads for blending social perception with technical competence, and in this vein makes the particularly important point that professionalization in the social sciences has not only thwarted the raising of socially relevant queries but has also led to the ironic dehumanization of social sciences. It is perhaps this dehumanization, more than anything else, that has rung the death-knell of relevance. Unfortunately, the colloquium did not fully explore this issue.

Another issue of vital importance of relevance that seems to have been side tracked is that of integrated or multidisciplinary research. Several years ago Bottomore had brought it to our attention that in investigating practical problems, we are confronted with a "network of interrelated factors which extends far beyond the limited situation in which the problem occurs." So, even when we have asked the right questions—and in fact, more so after such questions have been raised—how do we solve this difficulty if there is no integration. V.K.R.V. Rao has recognized the need for integration but feels that sociologists and economists have no converging view points and therefore cannot work together. He gives the economists a tall order, "We economists must also get acquainted with basic essentials of other social sciences, if we want to give relevance to policy formulation in our research." (p. 4) This is palpably unrealistic and another solution must be found.

No academic meet is complete without someone trying to control, if not puncture, the euphoria generated on such occasions. Balwant Reddy has done the expected. It is my feeling, he has lamented "that if a seminar is held again on the same theme, it will be the same issues we are discussing now that will be discussed again, and in the same fashion..." (p. 355) Madan too has complained that "we do not seem to be moving forward." (p. 47) The complaints are justified. But should we stop raising questions and give up periodic self-assessment because we have really, or presumably, not moved forward? I do not think so. Probably, in the past, questions of relevance have been raised a bit too early in time. In recent decades social sciences have secured a foothold, however delicate, in policy making. This foothold will become more secure only when we have grappled with the various uncomfortable dimensions of "relevance". In the critical juncture in which social sciences are placed today, it would be well to note Kaplan's warning that "when science is divorced from policy, the result is not only that science is "set free" but also that policy is thereby thrown on its own resources, which to say that it is left to be determined by tradition, prejudice and the preponderance of power". Social scientists can disregard this warning only at both collective and individual peril. Readers of the volume will certainly end up being more enlightened about a problem that can no longer be shelved.

A.R. Saiyed

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Quarterly Journal of Gokhale Institute of Politics and Economics

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Mathew Zachariah

His article (pp. 311 to 320) essentially consists of notes toward a substantive article on the topic. These notes were written in 1982 and formed the basis of a contribution to a panel discussion at the June, 1982 annual meetings of the Comparative and International Education Society of Canada held in Ottawa, Canada. They are presented here only to stimulate discussion of this topic.

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